INFORMATION AND AGENDA 21

Report of an Informal Consultation on Environment, Development, and Information. IDRC, Ottawa, 11-12 April 1994

Edited by

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PREFACE

The Earth Summit in Rio de Janeiro, June 1992, had a profound impact on individuals and institutions around the world. It raised awareness about the vital relationship between environment and development, and generated a framework for global action, namely Agenda 21. Perhaps most significantly, it reinforced the critical point that the complex nature of the problems and the path to their solution demand a collaborative approach.

In reviewing the initiatives taken after Rio, it is clear that no single UN agency, donor, NGO, or other organization can respond in isolation to the needs of Agenda 21 and expect to be fully effective. The challenges involved are too multi-dimensional yet interdependent. Cooperation will be essential, with operational alliances, strategic partnerships, closer coordination of effort, and sharing of past experiences and future plans.

What has also become clear as we survey the follow-up to the Earth Summit is the requirement for a special focus on one of the major cross-cutting issues that was highlighted in Agenda 21, particularly in Chapter 40 ("Information for Decision-Making"). Rarely has the potential role of information for development been given such prominence within the international community. Whether in "bridging the data gap", monitoring the environment, transferring of technological know-how, establishing communication networks, or empowering individuals and community groups, information is the fuel of sustainable and equitable development. At the same time, despite - or because of - the diverse ways in which information (and information networks, initiatives, and technologies) is intertwined with the different components of Agenda 21, there is no ready-made and conspicuous forum to review current needs, initiatives, and progress in this field.

Consequently, encouraged by initial exploratory conversations, IDRC proposed an informal meeting of a number of organizations that had demonstrated their interest in Environment, Development, and Information. The response was overwhelmingly positive. Subsequently, an intriguing mix of NGOs, bilateral donors, UN Agencies, foundations, and others assembled at IDRC in Ottawa, 11-12 April 1994. The purpose was to hold an "informal consultation" on progress, problems, and priorities in the information field post-Rio.

This document is a summary of the discussion that took place during an intensive two days, together with a synthesis of the background material submitted by participating organizations in advance of the meeting. The compilation provides an overview of the current information mandates and initiatives of several major actors, as well as the collective assessment of opportunities for collaborative action. No claim is made that this constitutes the complete picture of major international activities, nor that the initial perspectives presented here are the product of full and careful deliberation. But the report does represent a useful starting point for further analysis and debate. It is the hope of participants that this "informal consultation" might serve as a catalyst to stimulate additional discussion in other fora, and to do so within a more structured and cooperative framework. An ambitious objective, to be sure; but an essential one.

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ACRONYMS

CIDA	Canadian International Development Agency
CIESIN	Consortium for International Earth Science Information Network
ITeM	Instituto del Tercer Mundo
IDRC	International Development Research Centre
IIED	International Institute for Environment and Development
IISD	International Institute for Sustainable Development
IUCN	International Union for the Conservation of Nature
IWTC	International Women's Tribune Centre
RIVM	Rijksinstituut voor Volksgezondheid en Milieuhygiene (National Institute for Public Health and Environment Protection - The Netherlands)
UN DPCSD	United Nations Department for Policy Coordination and Sustainable Development
UNIFEM	United Nations Development Fund for Women
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WETV	The Global Access Television Service
WEDO	Women's Environment & Development Organization
WCC	The World Council of Churches
WEC	World Environment Center

PART I

SUMMARY OF DISCUSSION AND DECISIONS

INTRODUCTION AND OBJECTIVES

1. IDRC hosted an informal meeting of several organizations that had shown interest in the convergence of Environment, Development, and Information. Within this broad domain, the specific focus of the initial consultation was the set of information issues identified in the Agenda 21 Action Plan, especially (but not exclusively) those contained in Chapter 40, "Information for Decision-Making". Attending the meeting were 29 participants drawn from 24 organizations, comprising a mix of international NGOs, UN agencies, and bilateral donors (-- See Annex I).

2. The three objectives of the consultation were: (i) To increase awareness and understanding of the various concerns, priorities, gaps, and approaches in the information field following the UN Conference on Environment and Development (UNCED); (ii) To share information on current and planned post-UNCED initiatives, with a view to identifying complementarity and collaborative action; (iii) To explore whether there is a need for an ongoing informal consultative mechanism to stimulate debate and action in this field.

THE EARTH SUMMIT: CURRENT ASSESSMENT

3. To provide further context for the discussion, two participants were invited to comment on the outcomes of the Earth Summit that took place in Rio almost two years ago, in June 1992. Keith Bezanson, President of IDRC, reflected on the successes and failures of UNCED, and the challenging climate within which international cooperation and development must now take place. Rio was a valuable political success and can claim several landmark achievements: (i) It increased public awareness of the profound linkages between environment and development; (ii) A new generation of leaders from business and industry has become engaged constructively in the pursuit of sustainable development; (iii) Educational curricula and research agenda have been reshaped; (iv) A radical change in international diplomacy emerged during the UNCED process, especially in the way that non-governmental organizations were recognized as major and indispensable actors in a consultative approach to international negotiations and decision-making; and (v) Several major international agreements were adopted -- the Rio

Declaration, Statement of Principles on Forestry, the Convention on Biodiversity and on Climate change, and the Agenda 21 Action Plan.

4. The main shortcoming of Rio is that it generated little in the way of specific, concrete action (and funding) to address directly the major problems of energy overconsumption, debt burden, mass poverty, population pressures, overexploitation of natural resources, etc. On balance, however, Rio was an impressive start; the present concern is that its momentum has started to wane. Sceptics might claim the "environment issue" has quietly run its political course, overtaken by more recent domestic and international concerns. Financial pledges made in Rio did not materialize, leaving an inadequate Global Environment Fund. Many NGOs have been encountering financial constraints. But a threshold was crossed at Rio, and the urgency for action has only increased since then. The risk of complacency must be recognized; the discussion should now be advancing beyond well-intentioned plans to reporting on action and results.

5. Many of the organizations participating in the present meeting have made significant program shifts and structural changes in order to respond more effectively to the imperatives of Agenda 21. Clearly, however, no single donor, development agency, NGO, or other institution can implement its response in isolation or in a territorial manner. The way ahead requires a broad consultative approach, sharing of ideas and experiences, developing complementary approaches and collaborative partnerships. The Agenda 21 Action Plan is reaching a critical stage. Is it for real, or not? Will it be dismissed as empty rhetoric, or can we build on it, give it substance, and convert the words into action? The challenge is to find the mechanisms and the opportunities, within the limits of available resources, and to bring new momentum, vitality, and tangible progress to implementation of Agenda 21.

6. The second assessment of the Earth Summit focused on the information issues. It was presented by Janos Pasztor, formerly an information specialist with the UNCED Secretariat and currently with the UN Framework Convention on Climate Change. In fact, "information" was not part of the original UN General Assembly resolution; it was not assigned to a Working Group, not was it expected to constitute a separate chapter in Agenda 21. However, early drafts of several chapters contained discussions of data, information, and networking issues. There was a gradual evolution towards a more systematic examination of these, both within the context of specific chapters and cross-sectorally in Chapter 40. The latter, entitled "Information for Decision-Making", presented two program areas for action -- Bridging the Data Gap, and Improving Availability of Information. Thus Agenda 21 significantly increased the profile of information issues in connection with development and the environment.

7. Since Rio, a considerable amount of information-related activity has been initiated by individual agencies, as the background material assembled for this meeting testifies. Preliminary evidence also suggests there is some progress at the national level in a few countries. On the other hand, at the global inter-governmental level, the picture is less positive. The Commission on Sustainable Development, the principal focus for follow-up on Agenda 21, is still at the initial stages of its work. There is no information support system in place as was originally envisaged in the UNCED discussions, and so two years after Rio most of the information on what is being done and by whom is largely anecdotal and incomplete.

8. This is not to criticize ongoing individual efforts. But if the problems are to be approached more effectively through collaborative efforts and global partnerships, more systematic information support systems will be required. Specific topics meriting attention are: (i) **Coordination** -- There is tremendous overlap, and probably duplication, of information (and other Agenda 21) activities. There is no ready source, central or decentralized, to record what is being done, where, with what results. (ii) **Reports** -- Related to this is the complexity of preparing, managing, and using the various country monitoring reports; they lack common formats, data requirements, cross-referencing, archiving locations, and so on. (iii) **Indicators** -- Although a few organizations have initiated work at different levels, much more needs to be done, and in a coordinated, systematic manner. (iv) **Information Gap** -- While some in the North are beginning to suffer from information overload, there is still significant lack of access to information in the South. A major factor in bringing about change will be the revolution in information technology but, just as developing countries start gaining access to the Internet, the Northern countries shift gears on their information highway, so a different type of gap is maintained. (v) **Information Availability** -- It is essential not to lose sight of other critical issues that are not necessarily technology-driven. One of the key tasks is how to improve the usefulness of information, including the transformation or repackaging of data and text into more usable forms. (vi) **Information Watch** -- Many organizations are playing a role in the information field but there is no conspicuous and effective focal point to promote this component of Agenda 21. No single organization has a primary mandate to monitor progress, address technical issues, provide metainformation, etc. The implications of this should be re-examined.

9. Three subsequent observations by participants are worth recording at this point. (i) It was confirmed that the Commission on Sustainable Development would be reviewing progress in implementing Chapter 40 as part of its 1995 review cycle. The CSD Secretariat only recently secured sufficient staff to begin providing information support; several steps have been taken recently to improve information gathering and access. (ii) It is important to reinforce the practical use of information for decision-making. In relation to this, inclusion of forecasting, as well as monitoring, should not be overlooked. (iii) Investment in information infrastructure (and consumption) by developing countries can generate significant benefits. The information revolution works

with a different logic than the resource-hungry industrial revolution, and so there may be some cause for optimism in this field.

POST-UNCED INFORMATION INITIATIVES

10. Material submitted by participants was used to generate two lists. Contained in Part II are statements of the more general Agenda 21 objectives and priorities as declared by several participating organizations. Part III is a compilation of specific post-UNCED information activities highlighted by the various organizations. While not attempting to serve as an exhaustive compendium, Part III does provide a useful illustration of significant information activities. Although desirable, time did not permit the group to map out the activities in terms of sector, user, location, etc.

11. The most effective approach to organizing this type of information as part of the Agenda 21 tracking process will need further exploration. An initial attempt has been made to link individual information activities to specific chapters and/or paragraphs of Agenda 21. Another suggestion would be to group information activities into clusters such as:

- Developing and strengthening of national information bases and systems
- Exchange of information and data
- Inventory and assessment activities
- Research and development of methodologies
- Global and regional database development and maintenance
- Information for decision-making
- Data collation and compilation
- Early warning and risk assessment
- Environmental accounting
- Development of environmental indicators

12. Another approach would be to group the activities into a small number of focus areas such as:

- Information reporting on sustainable development
  (e.g., user requirements
  subjects
  formats
  filters
  integrated models
  indicators
  evaluation)

- Information and capacity building
  (e.g., national needs *versus* capabilities
  regional networks
  access to information and tools)

- Information management and networking
  (e.g., systems
  software
  metainformation
  harmonization
  new tools
  communications)

13. Within each area, information could be gathered systematically in response to a set of questions such as:

- What needs to be done?
- Who is doing what, where?
- Where are potential points of collaboration?
- What can be done immediately?
- What and where are the gaps?

14. It might also be possible to develop a consensus on some basic principles to guide information priorities. The following illustrative list was proposed (but not debated):

- More information, less data technology
- More information on environment, development, and society; fewer environmental data *per se*
- More indicators, models, and forecasts, fewer data streams
- More user-defined information products, fewer agency-defined research results
- More emerging issues and early warning, fewer historical reviews
- More policy formulation and implementation, less awareness raising
- More enhancing the capacities of countries to access and use existing data, less improving national monitoring systems
- More integrated, multidisciplinary assessment, less sectoral monitoring
- More collaboration, cooperation, and coordination, less duplication

15. Subsequent discussion underscored the value of convening a group drawn from across the spectrum of concerned organizations, contributing their different perspectives. This was manifested, for example, in the discussion of target user communities. To what extent was the term "decision-maker" confined to government policy-makers? What about the private sector? What about broader attempts to reach the public and increase

their awareness and participation? Newer information technologies, for example, can bypass bureaucratic hierarchies and provide more direct access and input. However, having information *per se* does not automatically empower people and ensure democratization. This requires people to be actively involved in decision-making and resource allocation through a meaningful participatory process. Indeed, if this two-way interaction becomes more commonplace, the conventional distinction between "providers" and "users" of information becomes blurred and inadequate. Emergence of new relationships can be anticipated, with greater attention to information flows and interpretation. Information cannot be delinked from the enabling environment within that society for making decisions.

16. The forum also provided opportunities for participants to table documents or give demonstrations of specific information plans and activities. Presentations were made by the World Bank (COMET and STARS information systems), IDRC (ELADA 21, the electronic atlas of Agenda 21), UNDP (Internet access to UN information), CIESIN (Information Cooperative), UNEP (the UNEP Environment Assessment and Reporting Sub-Programme), and UNDPCSD (status of electronic exchange of information at DPCSD). Annex II is a bibliography of material tabled at the meeting; unpublished papers provided by participants have been included as Annex III.

GAPS, PROBLEMS, CONCERNS

17. One analysis of Chapter 40 of Agenda 21 noted the following aspects that were either not covered or could have been strengthened:

- Critical evaluation of existing systems and organizations
- Setting of priorities among objectives, activities, and users
- Discussion of problems of sustainability of information systems
- Discussion of the relationship between "sustainable development" information and "environmental" information
- Mechanisms for monitoring progress in implementing Chapter 40
- Action plan for implementing Chapter 40
- Recommendations on the roles and responsibilities of specific institutions
- Stronger reference to the involvement of non-UN institutions and processes
- Stronger reference to national information policies

18. A quick sampling of opinion generated the following list of additional issues related to the implementation of Agenda 21; no doubt it would have been much longer if time had permitted.

- Marketing and publicity
- Cultural aspects
- User needs and feedback
- Organizational policies regarding value and use of information
- Resource constraints
- Data collection/analysis capacity in developing countries
- Adding value to information
- Changing national policies related to information (e.g., PTT practices)
- Basic infrastructure inadequacies
- Capacity building
- Training requirements
- Diversity and incompatibility of information systems
- Information brokerage
- User involvement in participatory approach
- NGO role in data collection in developing countries
- Internet (benefit:cost analysis for developing countries)
- Revisiting/Improving the usefulness of existing information systems
- Sectoral *vs.* Intersectoral (and Multisectoral)
- Assumption: Information flow is sequential
- Revenue generation, pricing, and cost recovery
- Copyright

19. The list as currently presented is difficult to address because it lacks a framework that demonstrates priorities, relationships, categories, etc. However, these could be reexamined within the framework of the "Information Value Chain", which attempts to demonstrate focal points in the sequence of activities from information collection to information use. Another approach would be to examine whether the list represented the many symptoms of a few, key fundamental problems. A valuable task would be to identify these "metaproblems", and their possible solutions. Examples of these major underlying issues upon which to focus might be: (i) The need to accept realistic limits on the availability of additional funds and to recognize that there is already a considerable amount of resources being channelled into the information field; the problems are related more to the need for more effective use of these funds. (ii) The need to demonstrate more effectively the potential linkage between use of information and subsequent practical action (whether acquisition of technology, development of a new policy, provision of health information, etc.). There are many implications here, from improving the design of information services through to stimulating a broader understanding of the value of investing in information.

20. One consensus that emerged was existing information systems could be improved if they took into account the following criteria for increased effectiveness:

- Meaningful participatory approach (-- within the organization, as well as with external clients, users, and beneficiaries)
- Effective feedback loops at all points to encourage two-way (multiple) flows of information
- Cost-effectiveness of services (-- not necessarily complete cost-recovery, but better understanding of benefits and their costs)
- Attention to particular needs of different types of users
- Developing the role of **"information broker"**, to help interpret, manage, filter, and add value to the flood of available information. The information broker is a facilitator who can raise awareness about what is available, at what costs, and for what purposes.

THEMATIC AREAS

21. Several interrelated topics of common interest emerged in the course of the discussion. It proved possible to cluster these into more manageable groupings that could provide a focus for follow-up. Follow-up would take place initially through correspondence among groups of concerned participants, leading to exchange of practical experience, identification of case studies and/or joint activities, convening of specific workshops, development of models, and other outputs. The Themes described below are not mutually exclusive and reflect only the priorities raised during the two-day encounter; no doubt further debate would generate additional themes and components.

A. Sustainability

22. This Theme captures an area of increasing concern for both implementing agencies and sponsors. Financial pressures are seriously threatening the viability of many information systems and services. There are several potential entry points for further action. An underlying topic for research is the perceived **value** and **impact** of information; this should ensure that those responsible for resource-allocation in the information field have a clear understanding of the benefits being derived from information and the investments that are necessary. Related to this is the **marketing** of information, a topic which is receiving increased attention. One substantial element of this would be **commercialization** of services for revenue generation and cost recovery (and the limits thereof, as there will always be important actors in sustainable development who need information, can make use of it, but cannot afford the market price); another element would be marketing in terms of **promotion** to users and sponsors.

B. Participatory Processes

23. Many interventions converged on this Theme. There was a concern to increase sensitivity towards **user/provider interactions**, understand better the **non-users** (potential users) of information, improve **feedback mechanisms**, strengthen the role of the user in **overall system design** (i.e., not only in design of individual outputs), and generally adopt more effective **participatory approaches** to capacity building in developing countries.

One catalyst for further discussion would likely be the proposed "Information Resource Centre on Participatory Approaches" being developed by IIED.

24. The experience gained over the past 20 months through the **Sustainable Development Network** launched by UNDP was of particular interest to the group. The SDN process is based on a participatory approach involving all potential stakeholders, e.g., government, private sector, academia, NGOs, the media, youth groups, etc. Although this attention to the specific needs and contributions of the various participants is complex and time-consuming, it provides the essential foundation for an effective and sustainable system. The initial capacity-building phase inevitably results in a time lag (-- perhaps 2 or 3 years) before utilization expands significantly and benefits can be observed. Measures to reduce the time lag are always being sought, but it is important for SDN participants and sponsors to recognize the valuable underlying process that is taking place. SDN reflects the criteria for effectiveness noted above (paragraph 20) and is a functional model. UNDP is interested in co-financing with other partners; indeed, many of the organizations participating in the Ottawa meeting have developed a collaborative relation with it.

C. Reporting

25. The underlying concern was to **simplify** the present complex reporting requirements through improved coordination, eliminating duplication, standardizing formats and timetable, etc. This would also include sharing of common data sets, and repackaging the information for dissemination to different users. Greater attention must also be given to the nature, value and use of different types of **indicators**. Another topic for exploration was the **role of NGOs** as users and providers of these data.

D. Community-level Users

26. A lot of discussion focused on the different categories of users of information, and their different needs. Many participants felt that a significant group of information users (or potential users) requiring greater attention was the one loosely defined as "the local community". For some organizations in the meeting (but clearly not all), this

represented a new or non-traditional user group. There was a need for better understanding of the **information flows** at this level, including the role played by **information brokers** and other intermediaries. It is important for experts and professionals to be responsive to local knowledge and expertise, and for information from the grassroots to affect decisions and change. **Ownership** of information was another related issue, especially when local knowledge is pirated and makes profit elsewhere, without local compensation. This Theme was closely linked to the discussion of Participatory Processes.

E. Cultural Issues

27. An alternative title might be **sociology of information**. Specific items raised for further debate included **gender considerations** within the information field (with implications for access, system design, training, education, employment, etc.); understanding better the linkages between **information, communication, and education**; ensuring that technical development of information systems does not lead to their **loss of relevance to actual needs**; and recognizing the **cultural values** attached to information and information technology.

NEED FOR COLLABORATIVE ACTION

28. Prior to the meeting, participants had been invited to identify potential areas for collaborative action on information initiatives that would help implement Agenda 21. A compilation of responses is presented in Part IV.

29. A prerequisite for increased cooperation among the group would be to have ready access to information on each others' activities and evolving programs and priorities. A simple and convenient channel of communication also would be required. Wherever possible, the group wanted to reinforce existing mechanisms before creating new ones. Consequently, the group would need to learn more about information sources and networks currently available that would facilitate information exchange. Some of these initiatives were outlined during the meeting.

30. The **International Network for Development Information Exchange (INDIX)** is about to publish the third edition of the DAI CD-ROM. This database will contain over 90 000 records drawn from more than 200 international, regional, and national organizations. These encompass the development activities executed or funded by the UN and its specialized agencies; transactions of the OECD Development Assistance Committee; the IDRIS database of development research projects funded by IDRC, IFS, BOSTID, FINNIDA, JICA, and SAREC; project databases of USAID, CIDA, Inter-

American Development Bank, and the SPAAR Secretariat; and more. Further information can be obtained from the INDIX Coordinating Unit, c/o IDRC, Ottawa.

31. The **Consortium for International Earth Science Information Network (CIESIN)** is a private non-profit organization specializing in improving access to, and utilization of, physical, natural, and socioeconomic information related to the environment. Its primary mechanism for exchange data and information worldwide is the Information Cooperative, an international framework and extensive network of partner organizations. CIESIN provides reference services, develops databases, produces thematic guides, and offers other services to a broad user community drawn from all sectors. (Further details can be obtained direct from CIESIN.) The group was impressed by CIESIN's work and agreed to explore ways in which the network might be used to meet the need for information exchange as expressed by participants.

32. The **DonorNet** initiative was proposed at a meeting of donors in Bellagio, November 1993, as a mechanism for supporting sustainable development within the framework of Agenda 21. It will be an electronic forum for encouraging interaction among donors on policy formulation, program implementation, sharing of information, publicizing lessons learned, etc., and for encouraging more effective use of electronic networks to help carry out these collaborative efforts. It will attempt to build on the expertise and systems already available within participating organizations. A feasibility study is in progress. As many of the organizations represented at the Ottawa consultation may also be associated with the DonorNet project, its progress and potential implications for the present group will be monitored.

33. Whatever the final choice of network, the group compiled a list of features that should be incorporated in any electronic system for capturing information activities on environment and development. Common elements included identification of the clients/users, the subject, the location, the policy issues being addressed, the timeframe, intellectual property considerations, funding opportunities and requirements, principal activities planned, principal publications, and the contact person. Furthermore, the system should be readily accessible to NGOs, and other interested parties; it should not be labour-intensive; it should offer improvements upon existing internal systems rather than building new ones; and it should provide better access, interfaces, and filters to improve the value of the information obtained. Developing such a system would be feasible, providing organizations had the political will. It would also be valuable, not just as a repository of information but as a framework for mapping out present types of information intervention, and for developing matrices as planning tools for better integration of activities.

FUTURE MEETINGS

34. In response to objective (iii) of this meeting, i.e., whether or not there was a need for an ongoing informal consultative mechanism, the consensus was that this type of encounter was valuable and worth pursuing. Although there were significant differences in the mandate and preoccupations of participants, the variety of perspectives enriched the debate. It was essential to have a depoliticized forum such as this. Options for the future included electronic conferencing as well as face-to-face meetings. One proposal was that subsequent meetings (or conferences) should focus on a single major topic so that more in-depth discussion could take place, with more substantive conclusions and concrete follow-up action. Meanwhile, it was evident that informal "special interest groups" were forming around certain topics; ongoing dialogue in these groups would be encouraged.

DECISIONS AND ACTION

35. Participants interested in more active follow-up on one or more themes agreed to establish informal correspondence groups. For organizational purposes, one member of each group will be encouraged to serve as "lead correspondent". Several participants have already declared their preferences; updates should be sent to IDRC so that a more complete listing can be circulated. (Recommendations for merging or adding themes are also welcomed.)

A. Sustainability
B. Participatory Processes
C. Reporting
D. Community-level Users
E. Cultural Issues

36. Another group will be formed to examine the opportunities presented by CIESIN for advancing the interests of the group.

37. Further analysis of the specific gaps, problems, and concerns reported in this initial meeting will be undertaken in search of linkages and identification of underlying "metaproblems".

38. The draft of an updated version of IISD's popular "Sourcebook on Sustainable Development" will be distributed to participants.

39. Similarly, all participants were invited to share with the group selected materials (draft strategic plans, policy statements, new initiatives, etc.) for information and/or comment.

40. The possibility of the CSD Secretariat taking responsibility for more effective geo-referencing of environment and development information, as well as more general support for refinement, promotion, and use of information systems related to sustainable development, will be pursued.

41. The possibility of the UN Information Systems Co-ordination Committee taking into account an expanded participatory approach and the practical experiences of new information systems (such as the World Bank's COMET and STARS) will be pursued.

42. The UNDP national offices provide a focal point for obtaining information on UN activities. The other UN agencies would aim to consolidate their efforts and improve the effectiveness of this existing channel.

43. The feasibility of the DonorNet initiative providing a viable mechanism for communication and data exchange among the present group will be monitored by IDRC.

PART II

STATEMENTS OF AGENDA 21 OBJECTIVES AND PRIORITIES

Most of the organizations participating in the Ottawa consultation provided background material describing their involvement with Agenda 21. For ease of reference, the material has been sorted, where feasible, into three sections. The first contains more general statements of Agenda 21 objectives and priorities and appears below; in some cases information was not available, and in some other cases reference has been made to relevant material contained elsewhere in this report. The second section contains lists of specific information activities, and is presented as Part III. The third section contains suggestions for future collaboration, and appears as Part IV.

1. CIDA

CIDA is well advanced in its follow-up to Agenda 21. In 1993, it undertook an analysis of key themes in Agenda 21, and prepared a programming guide for use by CIDA professionals. This "Friendly Guide" summarizes the chapters of Agenda 21 and relates CIDA activities to the objectives contained therein.

2. CAB International

In response to Agenda 21, CAB International has the following specific objectives:

i) To assist developing countries define their needs for scientific information in the agriculture, forestry and environmental sectors, and design sustainable information systems for meeting those needs;

ii) To facilitate the flow of scientific information (in all the above sectors, plus human health) to and from developing countries, in partnership with national institutions, international and regional organisations, and the international development assistance community;

iii) To help developing countries (a) manage efficiently and utilize their own scientific information resources in support of national development objectives, and (b) exploit modern information technologies for this purpose;

iv) To provide training in the management of scientific information systems for end users, librarians, documentalists and other information systems for

end users, librarians, documentalists and other information professionals, as a contribution to capacity building in developing countries;

v) To develop new information products and services in relevant disciplines, in line with developing country needs, and with emphasis on innovative electronic information systems; and

vi) To participate in collaborative ventures combining any or all of these activities.

3. Centre for Our Common Future

One of the chief recommendations of the Brundtland Commission (the WCED's informal name, after chairperson, Norwegian Prime Minister, Gro Harlem Brundtland) was to call governments together before the end of the 20th century to take stock and look at critical threats facing society. The result was the United Nations Conference on Environment and Development (UNCED) -- or the Earth Summit as it was popularly known -- in June 1992, which became the largest political summit and government-level meeting ever held.

In keeping with its role as informer and facilitator to the wider public, and due to its wide international and intersectoral network, the Centre for Our Common Future was positioned to assist the process for the non governmental organisations' input into the conference. Its mandate was expanded to bring traditionally-excluded audiences into the debate, broadening dialogue with governments, and building bridges across traditional

social divisions. The '92 Global Forum, which it co-organised, was a culmination of these efforts, as a vast array of different groups met in parallel with UNCED, to propose their own efforts for achieving sustainable development in the largest ever gathering of civil society on these issues.

The Centre was able to achieve this level of interest through a variety of avenues, including ten cross sectoral gatherings, which it held around the globe to galvanize action at every level, and the publication of *Network '92*, a monthly newsletter which informed a mailing list of over 15,000 organisations and institutions how they could get involved in the conferences and kept them up-to-date on the hot issues in the intergovernmental negotiations.

4. Earth Council

The Earth Council aims to promote and support greater public awareness, dialogue, and collaborative action on environment, development, and related issues, particularly in relation to the implementation of Agenda 21.

During the first meeting of the Earth Council in November 1993, its members agreed upon the following three programme elements:

i) Preparation of an Earth Report - The Earth Report will be a user-friendly tool to guide decision-makers towards the transition to sustainable development and to empower people at the grass-roots/tribal and indigenous people levels. It will review, monitor, and assess progress on the implementation of the Rio Agreements, both governmental and non-governmental.

   The report will combine statistical information, in the form of indicators and indexes, collected by environment and development organizations around the world, with public perception and case-form information.

ii) Facilitate People's Initiatives - This programme element will attempt to empower people to develop initiatives towards sustainable development by providing them access to objective knowledge, information, and experiences and by ensuring that the concerns and interests of people, particularly those at the grassroots levels and those who are disadvantaged, are brought to bear at all levels of policy and decision making.

iii) Contribute to Major Events - The Earth Council will prepare and present specific inputs to international conferences, negotiations and fora.

5. Environment Canada - UNCED Task Group

Environment Canada acknowledges that the purpose of the information system is to provide a decision making tool that can increase the effectiveness of the federal government's response to the UNCED commitments. In this regard, it will pursue marketing and further enhance this information tool.

It will also examine the development of a national information network comprised of sectoral component information bases, including those of governments and the independent sector within the context of the Projet de société.

The focus for activities will be relating federal and other Canadian responses to Agenda 21, especially with respect to activities directed to the UNCSD. Once Canada's national framework has been developed, however, relationships will also need to be made to that framework.

Information related priorities include:

i) establishment of an information system on UNCED follow-up activities within the federal government including a reporting and tracking capability;

ii) support of the Project de Société in its development of a national framework for sustainablility planning including the effective delivery of information and "learning tools" to Canadians; and

iii) preparation of Canada's reports to the UN Commission on Sustainable Development (UNCSD).

6. IDRC

In response to UNCED, IDRC's support is increasingly being directed into six core themes that cut across organizational units: **Biodiversity**, **Food Systems under Stress**; **Health and Environment**; **Information and Communication for Environment and Development (ICED)**; **Integrating Environmental, Social, and Economic Policy**; and **Technology and the Environment**. The Centre has set up an **Agenda 21 Unit**, located in the President's office, to support and facilitate the implementation of these themes and programmes for sustainable and equitable development by all its operational divisions.

Although present throughout all themes, most information-related projects are developed and supported through the ICED theme, as well as through the special programmes of the Information Sciences and Systems Division (ISSD), one of the Centre's five programme divisions. Within the ICED theme, IDRC's programme priorities include research in areas of: information management, information and communication technologies, information for decision making, and development communications.

The mission of ISSD is to "stimulate socio-economic advancement by providing access to, and better exploitation of scientific, technical and other knowledge". Its programme objectives are: Better Access and Use of Information, Improved Collaboration, Capacity-Building, and Information Innovations. ISSD activities are geared towards practical research and new approaches aimed at solving real information problems in the developing countries. These encompass, for example, decentralization of information functions within a country, including delivery of information to rural population; methods of organizing information; using new information technologies to help manage natural resources; examining mechanisms for increasing the sustainability of information services, and evaluating the impact of information on development. These objectives will be achieved while delivering support in IDRC's six core themes and related programmes for Sustainable and Equitable Development (SED). The SED programmes that are highlighted in the Information Sciences are **Information Capacity Building** and **Information Policy Research**.

7. IIED

IIED was closely involved in the planning and preparations for the Earth Summit in Rio. All parts of IIED contributed to Agenda 21; it worked closely with developing country partners to strengthen their positions and national reports; it was involved with providing formal advice to a number of UN agencies and government delegations; and was influential in the NGO community.

In the two years since Rio, IIED has analyzed Agenda 21 against all of its programmes; prepared popular texts, technical reports, and policy advice on Agenda 21 implementation; and has with partners been involved at all levels of national and international follow-up.

In many respects, Agenda 21 and IIED have sufficient in common to be able to describe the IIED Strategic Plan, particularly the strengthening and integration of programme work through the cross-cutting themes, as an organisational response to the challenges of the Earth Summit. Agenda 21 is thus IIED's first cross-cutting theme.

8. IISD

IISD seeks to operate within the spirit of UNCED. Agenda 21 and post-UNCED follow-up are incorporated into each program area. A key component of each initiative has been the development of strategic partnerships with organizations which share IISD's commitment to sustainable development.

9. IUCN

In 1980 IUCN, UNEP and UNEP and WWF launched the **World Conservation Strategy.** This strategy shows that development - the satisfaction of human needs and the improvement of the quality of human life - depends upon conservation and that conservation depends equally upon development. The Strategy aims to advance the achievement of sustainable development through the conservation of living resources. The Strategy has been tested by the preparation of national and sub-national conservation

strategies in over 50 countries. In 1991 a revised version of Strategy was issued. Entitled **Caring for the Earth: a strategy for sustainable living**, it extends and emphasizes the message of the WCS by calling for a new ethic for sustainable living - achieved through conservation that will keep our actions within the Earth's capacity and development that will enable people everywhere to enjoy long, healthy and fulfilling lives.

For IUCN, **Caring for the Earth and Agenda 21** are fully compatible. **Caring for the Earth** provides a holistic view of development and environmental linkages as well as a conceptual and ethical framework while **Agenda 21** sets out the strategies and programmes required.

The activities which will be pursued through the IUCN Programme to contribute to the implementation of Agenda 21 are based on IUCN's "heartland" of competence in understanding the factors that control the productivity, diversity, and resilience of the earth's major ecosystems, the ways in which they may be safeguarded, and the basis for ensuring that human use of natural resources is sustainable. To this end, the Secretariat and Commissions maintain core expertise in the ecology of the major biomes and in the conservation of biological diversity through, *inter alia*, conservation of species and protected areas. This competence in natural sciences is being integrated with a growing competence in social science disciplines which are required for understanding how different communities, social systems and social processes affect the environment. In order to translate this knowledge into practical methodology and applications, the IUCN Programme also draws on skills in environmental law, environmental assessment and the development of strategies for sustainability. In emphasizing its role of influencing, encouraging and assisting societies, the Programme includes policy development, education and communication components.

Based on this, the following steps are applied in advancing the conservation and sustainable development agenda:

i) monitoring and assessing what biological diversity exists, under what conditions; identifying the threats to its conservation; and developing an enhanced capacity to define priorities for conservation action;

ii) understanding how species and ecosystems function, how they might be sustained by conservation practice, and how to ensure that any use of wild living resources for human benefit is sustainable;

iii) developing and testing methods for the conservation and adaptive management of species and ecosystems;

iv) identifying and analyzing how human behaviour, value systems, knowledge systems, social policy, development approaches and economic activities related to the above functions and actions;

v) understanding how these relationships may effect conservation, sustainable use and equitable access to natural resources;

vi) assessing what policies, changes in behaviour, management, social organization, legal framework and international agreements are necessary to implement sustainable forms of development which recognize these relationships;

vii) where damaging impacts do occur, assessing what adjustments are necessary and what tools (processes, policies, methods, instruments) are most effective to compensate for, or correct, those impacts;

viii) promoting the continuing training and education of conservationists at all levels, and encouraging their involvement with local communities worldwide in the development of sustainable ways of living; and

ix) communicating the work of the Union and advocating its agreed policies directly and via media and interpretative systems, so as to influence societies in accordance with the Mission Statement.

10. IWTC

A major thrust of IWTC's work is to increase women's access to information and resources and their ability to make best use of that information. To do this, IWTC both provides information and trains women to produce their own information. In technical terms this work covers the gamut from producing low-cost visual materials and clip-art books to desktop publishing databases and establishing E-mail networks on specific topics.

IWTC sees an important role for itself in its efforts to translate research findings and policy mandates into information materials that bridge the gap between policy and action. An emphasis has been the development of highly visual, participatory educational materials for community level work. This emphasis on popularizing policy and research

is particularly important to IWTC's constituency, 81% of whom report working in institutions that provide direct services to low-income populations.

11. RIVM

RIVM's mission is to develop and apply methods to support the setting of strategic environmental policies. The experience gained initially at national and European level should be made available to the world level and regions other than Europe. Priority elements of information for decision making are the following:

i) **integrated reporting** (integrating over all issues of environmental policy and linking environmental changes to their driving forces);

ii) **forecasting** (looking beyond the important delays between current action, or non-action, and eventual effects); and

iii) **interpretation** (the explicit comparison with objectives or standards).

12. UN DPCSD

The objectives of UN DPCSD lie primarily in providing adequate and appropriate information to the Commission on Sustainable Development so that it may make the political decisions necessary for implementation. This information spans all activities within all forty chapters of Agenda 21. In this respect, all activities within Chapter 40 which call for improved organization and accessibility of information on sustainable development are of great concern to the Division.

In addition, as Task Manager within the United Nations system for the subject of "technology transfer," paragraph 40.14 is of considerable interest. One of the items discussed by the *ad hoc*, Intercessional Working Group on Technology Transfer of the Commission on Sustainable Development, which met in New York, 23-25 February 1994, is information for and about technology transfer. This Working Group suggested, *inter alia*, that the Commission may wish to consider a multi-stage project to assess existing information systems related to environmentally-sound technologies (ESTs), and the possible establishment of an international network of clearing houses for information on and referral to information on ESTs.

This Division is also Task Manager within the United Nations system for the subject, "decision-making structures", a cluster of four chapters within Agenda 21 that includes Chapter 40. This means that the Division will, in 1995, be reporting both to the Inter-agency Task Force on Sustainable Development and to the Commission on Sustainable Development specifically on the implementation of Chapter 40 at national, regional and international levels, including issues affecting coordination within the UN System.

13. UNESCO

Environment and development problems have been a major focus of UNESCO's work for the past 40 years. Beginning with Arid Zone Programme in 1951, numerous UNESCO programmes have been launched to address research, education, training and policy needs related to specific environment and development issues (e.g. water resources management, conservation of biological diversity) and specific ecological systems (e.g. islands, tropical forests, mountains and arid lands).

Since the Rio Conference, Agenda 21 follow-up has become one of UNESCO's top priorities and will be a central concern for the UNESCO Medium-Term Plan to be prepared for 1996-2000. For its 1994-95 programme and budget period, UNESCO has reoriented its environment and development programmes to meet the specific objectives of Agenda 21. UNESCO has focused particularly on those chapter of Agenda 21 in which it has substantial programmes and expertise, including the chapter on conserving biodiversity (15), protecting oceans and coastal zones (17), managing fresh water (18), strengthening the role of the scientific and technological community (31), science for sustainable development (35), promoting education, training and awareness (36), and capacity building (37). It has also launched four across-sectoral initiatives intended to chart new directions across established programme lines.

These initiatives focus on:

- capacity development;
- information and communication on environment and development;
- interdisciplinary sciences for sustainable development; and
- biological diversity.

A small committee of outside experts has been appointed by the Director-General to advise UNESCO on developing and implementing these initiatives. UNESCO is also about to launch a major inter-agency initiative on environment and population education and training with UNEP and UNFPA, in co-operation with UNDCP, WHO, UNDP and UNICEF.

UNESCO is actively involved in UN system-wide collaboration in implementing Agenda 21. UNESCO is one of nine core members of the Inter-agency Committee on Sustainable Development responsible for increasing co-operation and co-ordination among UN bodies. UNESCO has been asked to serve as "task manager" to co-ordinate within the UN system implementation of Agenda 21 Chapter 35 - Science for sustainable development - and Chapter 36 - Promoting education, public awareness and training.

UNESCO is fully participating in efforts to implement the conventions signed at UNCED, as well as in ongoing negotiations for a convention on desertification. UNESCO is involved in preliminary work to implement the Convention on Biological Diversity with the Intergovernmental Committee on the Convention. Commission (IOC), is participating in the implementation of the coordinating efforts to launch a Global Ocean Observing System and Programmes to train scientific, technical and managerial personnel. UNESCO is providing technical support to the INC on the proposed convention on desertification and will host its final meeting in June 1994.

The UNESCO Bureau for the Co-ordination of Environmental Programmes, established in 1990, is responsible for coordinating UNESCO's follow-up to Agenda 21 and for spearheading cross-sectoral work on themes such as climate change, biodiversity and information / communication. The Bureau is also responsible for input to UN system-wide effort up UNCED.

General environmental activities

UNESCO's four primary functions in the field of environment and development are to:

- promote research that addresses environmental and development problems;
- ensure that developing countries have trained researchers and managers;
- promote education that will provide citizens with the knowledge they need to make environmentally sound decisions; and
- disseminate research results to policy-makers.

UNESCO achieves these goals by working through international networks of researchers, trainers and educators, and donors to identify research, training, education and policy needs, and to mobilize human and financial resources to address these needs. UNESCO sponsors a wide range of environment and development programmes, many in co-operation with other UN agencies and scientific NGOs.

Environmental research

The fundamental thrust of UNESCO's environmental science programmes is to promote policy-relevant research, particularly the interdisciplinary research needed to address environment and development problems in all of their complexity.

UNESCO co-ordinates international research programmes on global environment and development issues through international networks of researchers from different disciplines, countries and sectors of society. These programmes identify gaps in research, organize training for research in developing countries, develop training for research in developing countries, develop standardized methods for data collection, management and analysis, and centralize and disseminate research results. Key scientific programmes include the:

- **Intergovernmental oceanographic Commission (IOC)** - implements numerous programmes focusing on the marine environment, including the Global Ocean Observing System (co-sponsored with WMO, ICSU and UNEP), and the World Climate Programme (co-sponsored with WMO, UNEP, FAO and ICSU); **Inter-regional project on research and training in coastal management (CCMAR)**;

- Man and the Biosphere Programme (MAB) - focuses on ecosystem functioning under different intensities of human impact, and on the management and restoration of ecosystems. Sub-programmes include the Diversitas Programme (IUBS, UNESCO, SCOPE), and the Tropical Soil Biology and Fertility Programme (co-sponsored with UNEP);

- International Hydrological Programme (IHP). Sub-programmes include the Humid Tropics Programme;

- Microbiological Resources Centres (MIRCEN) Network;

- International Geological Correlation Programme (IGCP); and

- Social Sciences Programme, including the Management of Social Transformations Programme (MOST).

Capacity building and environmental education

Capacity building consists of developing human resources through education training, and providing an adequate institutional framework and material support to enable researchers to use their skills. Capacity building for sustainable development, therefore, spans UNESCO's education and science programmes in environment and development.

UNESCO develops curricula and resource materials, collects and disseminates information about innovative teaching material, trains teachers, develops methods for evaluating education programmes, publishes technical journals on education, maintains profiles of national and regional trends in education, establishes standards for the Commission on Education for the 21st Century, headed by EU Commissioner Jacques Delors, in order to formulate policy recommendations for reforming education.

Key Programmes include:

- Education for All, which promotes literacy through efforts to make primary education available to all children and to provide basic education for adults and young people who are not attending school;

- International Environmental Education Programme (IEEP) (co-sponsored with UNEP), which promotes the integration of information needed for sustainable development into education at all levels, both within and outside the formal education system;

- Associated Schools Programme, which encourages educational institutions to organize special programmes designed to increase knowledge of world problems and international co-operation through the activities of a network of over 3.000 primary and secondary schools in 117 countries; and

- UNITWIN and UNESCO Chairs Programme, which supports higher education systems and institutions in developing countries through 15 regional inter-university networks and 35 UNESCO Chairs in 20 developing countries (including 4 Chairs in sustainable development).

A central objective of Unesco environmental science programmes is to work towards ensuring that every country has an adequate number of researchers and institutions through which they can work, and to promote through training and through an integrated research approach scientific information relevant for policy-making.

Each year, UNESCO:

- trains about 400 scientists, managers and administrators, primarily from developing countries in fields such as the management of biological diversity, arid lands, tropical ecosystems and small islands; about 250 researchers and managers in water resources managements through a network of 32 post-graduate courses and mobile training courses; 200 researchers and managers in the marine sciences, through post-graduate courses and individual study grands; and 200 researchers through post-graduate courses in earth sciences;

- supports institutions that offer in-service training in topics such as eutrophication control, agroforestry and soil fertility, water management in the humid tropics, and marine environmental monitoring;

- prepares modules, curricula and lecture notes on topics such as water resources management and marine science; and

- establishes about ten new UNESCO Chairs in universities in developing countries.

14. UNEP

Over the years, several Governing Council and General Assembly Resolutions have elaborated and made explicit the initial mandate of UNEP's monitoring, assessment and reporting functions *. While confirming UNEP's original mandate, UNCED made clear that the context in which UNEP operates has changed to - take into account the development perspective, socio-economic dimensions and major groups. Though UNEP is referred to in Agenda 21 in several Chapters, the central mandate of UNEP is described in Chapter 38 - International Institutional Arrangements - paragraphs 21 to 23.

* See also *The UNEP Environmental Assessment and Reporting Sub-Programme* in annex II.

15. UNIFEM

The mainstreaming of WED in post-UNCED policy development and programme implementation continues to be a focus for UNIFEM. In particular, the Fund places a priority on working collaboratively with the UNDP/Environment and Natural Resources Group. It is a member of the UNDP Environment Action Team through which it contributes to agency-wide discussions on organizational matters, inter-departmental coordination, as well as discussions on UNDP policy to promote sustainable development. Through participation in the Capacity 21 Steering Committee, UNIFEM also seeks to assist UNDP in promoting capacity building and decision-making with, and for women, as well as advocating for Capacity 21 funds to be allocated to programmes which support these efforts.

The monitoring of how institutional restructuring and programme development will respond to the Agenda 21 recommendations on 'women, environment and development' issues will continue to be a primary interest for UNIFEM. In particular UNIFEM will continue to play an advocacy role, using a range of information and communications means to see that resources and programming are more targeted towards women. It will also foster the greater inclusion of women's grassroots organizations in new consultative processes between the UN system and the NGO community, particularly in preparations for Fourth World Conference on Women, in Beijing, in 1995.

16. UNFCCC

The interim secretariat of the United Nations Framework Convention on Climate Change was established in 1990 to serve the Intergovernmental Negotiating Committee (INC). Its purpose is to support the intergovernmental preparations of the first meeting of the Conference of the Parties (March 1995). The COP will establish a permanent secretariat at the meeting - an entity that will probably build upon the existing interim secretariat.

The actual functions of the interim secretariat are still being defined by the governments, and all the information below is still tentative. Nevertheless, the following major activities are already being undertaken, or being planned for the future:

i) **Support for the COP and its subsidiary bodies.** This involves the organization of meetings of the COP, the Intergovernmental Negotiating Committee (INC), including the preparation of substantive documents and

liaising with Parties and other governments and international governmental and non-governmental organizations;

ii) **Communication and Review Process**. This involves collecting the regular National Communications (reports) from the Parties; preparing relevant substantive analyses of these communications for the Parties; and storing and disseminating the information, including broad public dissemination of information; and

iii) **Technical Cooperation Activities**. This involves undertaking an information exchange programme about who is doing what and where on climate change, primarily to help countries obtain support for climate change related activities and undertaking a training programme to help countries to prepare for the implementation of the Convention.

The UNFCCC is a "sustainable development convention" as opposed to an "environmental" or an "economic" convention, as it tries to tackle a problem (climate change) in the overall context of economic development. Consequently, and according to the above description, the activities of the secretariat will contribute to a number of Agenda 21 chapters, and programme areas within those chapters. In particular, once the implementation of the Convention is well under way, and when more specific protocols may have been added, the secretariat may need to be involved in a large number of mitigation-related activities, touching many of the different areas of sustainable development, including economic policy, planning, human settlements, and most importantly sectoral policies in energy, transport, industry, agriculture, land use, etc.

17. WETV

The energy for this initiative is provided in part by *Agenda 21*, the blueprint for action which emerged from the Rio Earth Summit in 1992. The UN Conference on Environment and Development stressed the need to protect the planet's biological diversity, pointing out the dangers to the ecosystem arising from the reduction of genetic variety. But equally important is the cultural diversity which enables societies to express themselves in healthy and dynamic ways.

Broadly defined, sustainable development recognizes the importance of social and cultural self-expression through the dominant medium of the time -- television. Cultural diversity has an importance akin to biodiversity for the sustainable progression of the

planet. It is within this context that WETV should be seen as an agent of sustainable development, a programme of actions larger than the traditions of "information" and "communications" which have, to some extent, been marginalized, particularly within development institutions.

In essence, WETV is a direct response to the imperative of Agenda 21 which asserts that:

> countries in co-operation with the scientific community should establish ways of employing modern communication technologies for effective public outreach. (Agenda 21, Ch. 36, 36.10(f))

WETV, then, seeks to employ the most powerful tool of communication - television - to engender a diversity of expression South and North, on important issues of sustainable development and environment. WETV will offer an alternative world view, not presently reflected in the mainstream media. In addressing the direct concern about "the lack of effective mechanisms for exchanging information between North and South" (Agenda 21, Ch. 40), WETV seeks to provide one solution to this problem by the establishment of its international satellite network system. This in keeping with the salience of "information as a cross-cutting component of environment and development."

18. The World Bank*

An important element to the Rio follow-up has been the IDA Replenishment, where governments agreed to a replenishment of SDR 13 billion (roughly equal to $18 billion). In real terms, this is broadly the same resources as for IDA-9. Adding reflows and transfers from Bank income, IDA-10 would have an additional $4 billion -- totalling $22 billion for the three-year period. Donors were not able to provide an additional "Earth Increment" -- but gave strong emphasis to the need to integrate environmental concerns into all of the Bank's activities.

* The World Banks' statement of Agenda 21 objectives and priorities is taken from "Implementing the Rio Agenda: The Role of the World Bank, a statement by Andrew Steer (Deputy Director, Environment Department, World Bank), to the Second Committee of the Forty-Eight Session of the General Assembly, New York, November 23, 1993.

The Bank's environmental activities - which involve policy dialogue, lending, technical assistance, research, and aid coordination - have four objectives:

i) assisting member countries in setting priorities, building institutions, and implementing programmes for sound environmental stewardship;

ii) ensuring that potential adverse environmental impacts from Bank-financed projects are addressed;

iii) assisting member countries in building on the synergies among poverty reduction, economic efficiency, and environmental protection; and

iv) addressing global environmental challenges through participation in the Global Environment Facility (GEF).

19. WEC

In response to UNCED, the World Environment Centre aims to:

i) help industry become more efficient, more environmentally responsible and more conscious of the value of providing healthier and safer working conditions; and

ii) help government realize that widespread environment, health and safety compliance can only be effected through collaborative efforts with industry, with enforcement used a subsidiary tool.

Its programme priorities lie on projects that fit into a long-term goal of institutionalization and on pursuit of ever-increasing levels of integration in information dissemination activities and technical on-the-ground project work. In this regard, it plans to develop expertise in project identification, formulation and financing.

PART III

POST-UNCED INFORMATION ACTIVITIES*

1. CIDA

CIDA is a key player in Canada's response to Agenda 21. It is working with the UNCED Task Group from Environment Canada, which has undertaken to organize a federal government information system to track Canada's progress towards meeting Agenda 21 objectives. An initial survey was sent to various government departments in the fall of 1993, requesting information on activities pertaining to the various themes addressed in Agenda 21. In February, 1994, the UNCED Task Group created the Canadian Sustainability Information System, incorporating all data received from federal departments and agencies in response to the survey.

CIDA is in the process of entering data on all bilateral projects into the survey document to be entered into the updated version of the database. Many bilateral projects are relevant to a number of Agenda 21 chapters, and often can be linked to five or more chapters.

CIDA has completed a preliminary analysis of the policy and programming implications of the Climate Change and Biodiversity Conventions for the Agency, and has initiated a review of programming to date in relation to the Biodiversity Convention.

2. CAB INTERNATIONAL

CAB International is involved in a number of activities related to Agenda 21 and to Chapter 40 in particular. The following are some examples of its Agenda 21 related activities:

* The numbers appearing in many of these entries identify the specific chapter and paragraph of Agenda 21 which is being addressed.

i) Environmental focus of CAB ABSTRACTS bibliographic database strengthened by expansion of subject scope and screening of broader range of source documents. (40.22)

ii) CAB Thesaurus restructured in cooperation with IDRC, FAO and USDA-NAL to provide a standardised vocabulary and thereby facilitate easier information retrieval from databases on agriculture and related disciplines. (40.23)

iii) Series of bibliographic databases published on CD-ROM covering disciplines relevant to the environment and sustainable development, including environmental degradation and amelioration (E-CD); plant breeding, biotechnology and plant genetic resources (PLANTGENECD); soil science and land management (SOILCD). (10.11)

iv) New information products and services launched in human health, with special focus on communicable diseases, including AIDS. (6.13; 6.44)

v) Innovative electronic compendium of information on crop protection designed, combining textual information with diagrams and colour photographs of pests and host plants, distribution maps, datasheets on individual pest species, details of control methods, and records of natural enemies, all in a concise and easy to use encyclopedic format, specially suited to decision making in developing countries. (8.53; 14.41a; 31.4h; 40.22a). Work also started on electronic compendium of information on tropical tree species. (11.15)

vi) Assessments conducted of the needs of users of scientific information in the agriculture and forestry sectors of developing countries, under CABI's donor-funded Country Survey programme; also in consultancies for other agencies. (40.5a)

vii) More attention paid to training (formal instruction and on-the-job experience) for developing country librarians, documentalists and other information professionals, as well as end users, in the management and dissemination of scientific information relevant to sustainable development. (40.15-18, 40.20)

viii) Cooperation strengthened with the International Environment Information System (INFOTERRA) and CTA (EC Technical Centre for Agricultural and Rural Cooperation) in the supply of database searches and scientific literature on agriculture and the environment. (40.24; 38.22f)

ix) Information resources in agriculture and related disciplines distributed in print and electronic (CD-ROM) form free to developing countries, using funding

mechanisms established in partnership with development assistance agencies. (35.22b; 40.18; 40.26)

x) Practical assistance given in construction of database of archival documents on agricultural research in Ghana, under an ODA-funded programme designed to strengthen Ghanaian library and information systems. (32.8; 34.15; 35.22)

xi) A similar exercise on environmental information, also in Ghana, in cooperation with IIED. (32.8)

xii) Cooperation strengthened with various regional and international information networks in agriculture, forestry and human health. (5.14; 11.34c; 35.22e; 11.34c)

xiii) Special funding mechanism (CABI Partnership Facility, established with support from UK, Canadian and Australian government donors) used to facilitate the supply of CABI information services, resources and capabilities to developing countries. (34.22-23)

xiv) International workshop organised with International Service for National Agricultural Research and CTA on Information Management Needs in National Agricultural Research Systems, focusing on appropriate strategies for meeting those needs, through partnerships between national bodies, international organisations and donors. (40.16)

xv) New information technologies (especially CD-ROM technology) introduced to developing countries, supported by user training, and financed through external sponsorship. (35.22d)

xvi) Programmes strengthened for the dissemination of information on biological control agents for agricultural and forestry pests. (14.77b)

3. CENTRE FOR OUR COMMON FUTURE

The post-Rio period has generated a feeling of anti-climax in the world community and a loss of momentum, which means that building on the Centre's earlier efforts has not been straightforward. Now, more than ever, the needs of the Centre's traditional audience are changing and diverging, a phenomenon identified in many quarters.

The Centre for Our Common Future is still seen as the first stop for information on sustainable development and it continues to offer a window on the world of environment and development and a constant flow of information, not only to governments, industry, and other important social groups, but to thousands of developing world organisations for whom the Centre is the only resource on these global issues. The two publications have been renamed *The Bulletin* and *The Network* and developed to cover post-UNCED activities at all levels. *The Network* has also become a subscription publication for the North and is now translated into Portuguese, Russian, and Spanish to reach a cumulative audience, along with the English version, of approximately 40,000. Beyond this, a further example of the Centre's leading role is the publication of *The Earth Summit's Agenda for Change* in 1993, a vitally needed plain-language version of the vast Agenda 21, which has been warmly received on all sides as a crucial aid in the formation of projects that will implement the Agenda over the next few years.

In its efforts to continue to fill the crucial gaps, the Centre will provide ongoing accurate and up-to-date information to all sectors of society. But this is only the beginning. Through consultation and research, the Centre is improving its knowledge of the needs and priorities of the vast number of organisations and interests now empowered through the UNCED process -- although mainly at a local level. These people are often without the means to forge relationships that count, or to build resources to carry out their tasks, or to make their message heard on the global scene. In keeping with the Centre's long-term objectives which have been to galvanize these people and to further the principles of sustainable development at every level, we see a vital need for a catalyst to service the diverse global community as they engage in sustainable development principles and practices.

4. CIESIN

Several elements of CIESIN's activities fall within the two main program areas of Agenda 21 Chapter 40:

(a) Bridging the data gap;

(b) Improving information availability.

Under area (a), CIESIN is developing global databases on administrative boundaries, demographics, and policy instruments, as well as a multisectoral time series

database on China. Under area (b) are four major programmes CIESIN is establishing or supporting:

- The International Information Cooperative
- The Global Change Research Information Office
- The Socioeconomic Data and Applications Centre
- The Human Dimensions Programme Data and Information System.

CIESIN is also supporting a Commission on Global Environmental Change Information Policy in collaboration with Harvard University's Centre for Science and International Affairs. Each of these programmes and data development activities is explained in detail below, and referenced to relevant paragraphs of Chapter 40.

Improving Information Availability

The International Information Cooperative (40.3,40.5d,40.8,40.9,40.17,40.18,40.19,40.22,40.24,40.25,40.29)

The major objective of the Information Cooperative is to provide through an electronic and human network access to multidisciplinary, high quality data and information relevant to the human dimensions of global environmental change. Within this framework, the Information Cooperative:

1. Provides platform for the coordination of efforts and improvement of communication among national and international organizations that require access to data and information on global environmental change.

2. Provides a mechanism where user needs are identified and core capabilities are promoted in order to facilitate access and dissemination of data and information, and the integration of multidisciplinary data.

3. Facilitates the exchange of human dimensions data and information among natural, social and health science users.

4. Makes environmental and human dimensions data from developing nations available to the international research community.

5. Makes available to users in developing nations resources provided through the Information Cooperative.

The Information Cooperative is being coordinated by CIESIN to address the following functional needs of users: (a) enhanced interactions among individuals and organizations; (b) better tools for individuals to locate and acquire pertinent data and information, analysis tools, and expertise; (c) strengthened training programmes; and (d) identification of gaps in current and planned data and research programmes.

Membership of the Information Cooperative currently includes 17 national and international research centres, agencies and intergovernmental organizations, including the United Nations Development Programme Sustainable Development Network and UNEP/GRID. The Information Cooperative is beginning a programme of establishing national information nodes in states with economies in transition in Eastern Europe. Ties with the System for Analysis Research and Training of the International Geosphere Biosphere Programme and the Third World Network of Scientific Organizations will link regional networks of research and data centres in developing countries with the global Information Cooperative network.

The Global Change Research Information Office (GCRIO)
(40.5d,40.8,40.9,40.17,40.24,40.25)

The Global Change Research Information Office (GCRIO) was established in 1990 under the U.S. Global Change Research Act. The purpose of the GCRIO is "to disseminate to foreign governments, businesses, and institutions, as well as citizens of foreign countries, scientific research information available in the United States which would be useful in preventing, mitigating, or adapting to the effects of global change." GCRIO is implemented within CIESIN under the guidance of the federal Committee on Environment and Natural Resources.

The Socioeconomic Data and Applications Centre (SEDAC)
(40.4,40.5d,40.8,40.9,40.17,40.18,40.22,40.24,40.25,40.26)

CIESIN was designated by the National Aeronautics and Space Administration (NASA) to build the Socioeconomic Data and Applications Centre (SEDAC) as one of nine data centres within the Earth Observing System Data and Information System (EOSDIS). While the other eight data centres are responsible for archiving natural science data, SEDAC's focus is on human interactions in global environmental change. The SEDAC is archiving socioeconomic data as well as providing access across scientific disciplines to data relevant to the anthropogenic causes and impacts of global change for use in research, policy making, and education.

SEDAC services include an electronic data catalog, analysis services information guides and communication services. An example of CIESIN analysis services is the Explore/Extract, a data exploration tool that allows rapid, interactive preliminary analysis of large census data sets. The information guides are a series of electronic hypertext resources presenting issues, data sets and organizations in a coherent, understandable context. CIESIN's communication services address needs of sustainable development in developing countries by ensuring that all services are available by electronic mail and by non-electronic means through a customer service group.

The Human Dimensions Programme Data and Information System (HDP/DIS) (40.5d,40.8,40.17,40.18,40.19,40.24)

Based on belief in the importance of anthropogenic factors in bringing about global environmental change and the potential magnitude and significance of the consequences of global change for humankind, the International Social Science Council established the Human Dimensions of Global Change Programme (HDP) in 1990. HDP is building an international social science research programme that parallels and complements the natural science global change research efforts, the World Climate Research Programme (WCRP) and the International Geosphere-Biosphere Programme (IGBP).

CIESIN is developing the HDP Data and Information System (HDP/DIS) to address the needs of HDP research programmes by identifying data access and information communications strategies. HDP/DIS will be implemented through collaboration with existing social science archives and information providers by forming a data and information sharing network.

The Commission on Global Environmental Change Information Policy (40.4,40.5a,40.5c,40.9,40.22)

Harvard University's Centre for Science and International Affairs and CIESIN have initiated a collaborative project to conduct a study of global environmental change information policy. The purpose of the project is to recommend policies and concepts to CIESIN, government agencies and related institutions that promote the effective and widespread use of emerging knowledge about global environmental processes by policy analysts in government, industry, academia and other non-governmental organizations. Particular emphasis is placed on supporting comparative environmental risk assessment and management.

Bridging the Data Gap

Global Geo-referenced Demographics Database and Global Administrative Boundaries Database
(40.2,40.4,40.8,40.17)

CIESIN is undertaking a global demographic data project to develop a suite of global georeferenced data sets on population, sub-national administrative units, and related socioeconomic parameters. Data products of this kind are urgently needed by natural and social scientists and other users for assessments of human interactions with the environment in the past, present, and future.

At present, population data are generally available only for the world as a whole or at a national level. Data on population for sub-national political or administrative units and associated boundary information are also available for some world regions in the recent past, but not for the world as a whole or for multiple points in time. An initial objective of the CIESIN project is therefore to work with the relevant scientific and technical communities to develop global time-referenced geographic databases that incorporate sub-national political boundaries and associated demographic data.

Policy Instruments Database
(40.2,40.4,40.17)

Assessing the effectiveness of different global environmental change policy instruments requires access to relevant policy material at all levels of government. However, finding this policy material can be a very difficult and time consuming process. To facilitate global environmental change policy research and evaluation, CIESIN is developing a comprehensive and integrated database on policy instruments on global environmental change. This database will include relevant information on policy instruments at the international, national, and sub-national level. CIESIN is broadly defining policy instruments to include legal documents such as treaties and laws; information on the negotiation and structure of these legal instruments; and directives, initiatives, and statements.

China in Time and Space (CITAS)
(40.2,40.3,40.4,40.17)

China in Time and Space (CITAS) was founded in order to inventory, acquire, develop and disseminate electronic databases on China. CITAS is a partnership between China specialists, initially sponsored by the Joint Committee on Chinese Studies (JCCS)

under the American Council of Learned Societies/Social Science Research Council, and CIESIN.

5. EARTH COUNCIL

The Earth Council aims to encourage a multiplying effect and partnerships by fostering three networks:

i) a network linking environmental and development ombudsmen around the world;
ii) a metanetwork joining already existing educational, information, and training networks; and
iii) a network of national councils on sustainable development.

The table on page 42 presents a list of the information activities for the three programme elements and their relationship with Agenda 21.

Programme 1 Earth Report (Chapters 3,4,5,6,7,9,10,11,12,14,15,16,17,20,33,40)	
Access to sources of relevant information	
Development of indicators and indexes on sustainable development with partner organizations	
Development of databases for preparation of the report and ideally for distribution with it	
Programme 2 Facilitate People's Initiatives	
Ombudsman Network (chapter 39)	Directory of environmental and development ombudsmen
	Communication with and between ombudsmen (e-mail, conferences, fora, etc.)
	Databases for ombudsman (international conventions and agreements, national legislation, etc.)
Education, Information and Training Metanetworks (chapters 14,24,25,26,27,28, 29,30,31,32,34,35,36)	Directory of educational, information and training networks on environment and development
	Communication with affiliated networks and their constituencies (e-mail, conferences, fora, etc.)
	Databases for affiliated networks and their constituencies (international and regional agreements, curricula, workshops and seminar, etc.)
Network of National Councils on Sustainable Development (Chapters 2,8,37,38,40)	Directory of National Councils on Sustainable Development
	Communication with and between Councils (e-mail, conferences, fora, etc.)
	Databases for Councils (information from Earth Report, success stories, calendar on environment and development events, etc.)
Programme 3 Contribute to Major Events (Chapters 3,4,5,6,7,8,14,33,34,38)	
Access to electronic conferences to determine calendar of events and to obtain their position papers and other related information	
Participation in conferences related to major events.	

6. ENVIRONMENT CANADA - UNCED TASK GROUP

Information activities are related to the development of a computerized information system to identify, catalogue and track federal response to the commitments laid out in Agenda 21 and the other UNCED documents.

7. ITeM

ITeM's major information related activities include:

- Third World Guide
- Third World Network
- World Rainforest Movement
- Chasque
- NGONET

A. Third World Guide

The "World Guide" (formerly "Third World Guide") is a 640-page reference book with periodically updated information on every country of the world and the main environment and development issues. It is published every two years in Spanish and English since 1979 with a worldwide sale of over 25,000 copies per edition.

The "World Guide" was published in CD-ROM format in early 1994 (in English and Spanish) as a result of a cooperation agreement between ITeM and the Unit for Interactive Media (EIM) of the University of Uppsala. This edition includes digitized maps and a user-defined graph drawing and map-plotting software.

B. Third World Network

The Third World Network (TWN) is a grouping of individuals and non governmental organizations concerned with Third World affairs. TWN was created on November 14, 1984, in Penang, Malaysia, on the occasion of the International Conference on "Third World: Development or Crisis?", organized by the Consumer Association of Penang. Since 1985, ITeM coordinates TWN activities in Latin America, supporting campaigns of Latin American NGOs on the environment and development issues that TWN addresses.

In Montevideo, the Third World Network Features Services is published in Spanish and distributed through mail and through Chasque, the Uruguayan node of the global electronic network APC (Association for Progressive Communications).

ITeM publishes the monthly magazine "Revista del Sur", Spanish edition of TWN's "Third World Resurgence" and the newsletter "Tercer Mundo Económico", Spanish edition of TWN's "Third World Economics".

TWN's books, booklets and pamphlets are also published in Spanish by ITeM.

C. World Rainforest Movement

ITeM acts as Latin American secretariat of this NGO coalition. In cooperation with the WRM's secretariat, ITeM organized a workshop (New York, February 25-27, 1992) on the relationship between deforestation of the tropical forests and the insecurity of access to the land by the poor peasants of the Third World. ITeM helped organize an NGO meeting during UNCED in Rio out of which a network on tree plantations and the pulp and paper industry was formed. Linked together through electronic conferences (for.paper and for.plantations in the APC networks), this network gathers information on the environmental, economic and social impact of these activities and provides it to affected communities.

D. Chasque

Since October 1989 ITeM has operated the Chasque electronic network, devoted mainly to serve the needs of NGOs, cooperatives, grass-root organizations and women's groups. CHASQUE offers E-mail (including delivery and reception of international messages), internationally distributed conferences and support services (training and user support), a cheap communication link to international faxes and access to local and remote databases. Thanks to an agreement with URUPAC (the packet-switching service of the Uruguayan PTT), all URUPAC users are able to exchange mail with Internet addresses through Chasque. Chasque is member of APC (Association for Progressive Communications), a non profit international network of nodes of electronic mail.

E. NGONET

During the process of the Earth Summit (UN Conference on Environment and Development, Global Forum and International NGO Forum) NGONET established an innovative global NGO environment and development information-sharing networking process, with specific concern for the information needs of Southern groups, indigenous peoples, women and grassroots organizations.

NGONET's main goal is to increase NGO understanding of, and participation in, environment and development issues, "closing the circle" from the negotiation and lobbying process at the international level to the actual development and environment protagonists at the grassroots. NGONET's role is to foster, hear and translate the visions of local communities, so that they become relevant and influential at the national and international levels.

NGONET is organized in regional nodes, linked with each other and with the major international networks through electronic communication tools. NGONET's nodes scan international developments, 'translate' them into terms relevant to local people, and scan the local community for information and actions that contribute to global solutions. Their main role is to act as 'information brokers' between the local, regional and international level.

Such structure seeks to strengthen decentralized mechanisms for information gathering and dissemination. ITeM (Montevideo) is the Latin American node and also hosts the overall coordination, EcoNews (Nairobi) for Africa and TWN (Penang) for Asia. An office in New York covers specifically the preparation of the Social Summit. WISE (Amsterdam) and IEPALA (Madrid) will be the Northern Hemisphere nodes. At the same time, NGONET will promote the active involvement of other Southern organizations and continue working together with several Northern institutions and networks.

The publishing activities of NGONET address the needs of NGOs to clear, non-technical briefings on the issues of relevance to them. Much time is spent by NGOs on the field trying to understand GATT, GEF, who is meeting where to decide what, etc. Much of this work could be done by NGO experts who have the resources to specialize on key issues. Supplying these briefings will be a priority for NGONET. The briefings focus on giving clear information and avoid polemics, giving people the information they need to think for themselves, rather than telling them what to think.

NGONET contributes towards the development of new technical tools to enhance and facilitate access to useful information and services (including training), and works towards financial sustainability through the marketing of communication services, information, and information technologies.

Specific outputs include a CD-ROM of non-official UNCED documentation (due to be published next month, with IDRC support, it will be a companion to the CD-ROM of official documentation), on-line access to full-text document collections (i.e., NGO papers and UNCED official documentation) and to databases (bibliographic, contacts, funding and other cooperation opportunities), dissemination of relevant information within the global NGO community, and two-way flow of information among NGOs and

between them and the governments, inter- governmental agencies, research centres, and corporations.

The APC network member nodes are "natural partners" in the information dissemination activities, and many of them are involved in the technical development projects. Other electronic networks are already carrying NGONET information and will continue and expand that activity: Antenna, Netherlands; GEONET, United Kingdom.

NGONET has contributed to the formulation of APC's women networking programme and will continue supporting its activities. The information needs of women groups related to the 1995 Beijing conference are particularly taken into account in all areas of NGONET activities. NGONET provided information and communication services for first PrepCom of the UN Population and Development Conference in May 1993 in New York and is now drafting plans to enable a similar set-up in Cairo (September 1994).

NGONET contributed in different ways to the UNCED process and will continue working in the follow up of UNCED. It provided information and communication services to NGOs participating at the first meeting of the Sustainable Development Commission meetings and briefs regularly those who are not directly attending.

8. IDRC

IDRC is involved in numerous projects related to Agenda 21, many of these in collaboration with other organizations. Most of the information-related activities fall within the two main programme areas of Chapter 40: Bridging the Data Gap, and Improving Information Availability. The following are some illustrations:

A. Guide to Agenda 21 (40.3, 40.22)

A publication entitled *A Guide to Agenda 21: Issues, Debates and Canadian Initiatives* which provides a brief overview of the issues and process that finally culminated in Agenda 21, was released in 1993 with the aim to improve availability of Agenda 21 related information. It discusses the individual chapters of Agenda 21 broken down into four parts: nature of the problems; summary of the chapter; nature of the UNCED debate; and some Canadian initiatives.

B. Earth Summit CD-ROM (40.22)

IDRC and the United Nations have collaborated to produce the *Earth Summit CD-ROM*, the only complete collection of official documents leading up to and including UNCED. The CD-ROM, containing material in the languages in which the original documents are written, includes a complete account of 179 national and regional reports submitted to UNCED and their English-language summaries prepared by UNCED Secretariat staff; 55 research papers commissioned by UNCED; speeches by heads of state and opening and closing addresses; lists of delegates and non-governmental organizations accredited to the UNCED; and official documents from the Preparatory Committee Meetings.

C. NGO Earth Summit CD-ROM (40.22)

IDRC is supporting the production of a companion CD-ROM by the NGO community which would contain the contribution of non-governmental organizations to the discussions leading up to and at UNCED and the parallel Global Forum. The CD-ROM is being produced at the Instituto del Tercer Mundo (ITeM) and is scheduled to be completed by late Spring 1994.

D. Reporting on Sustainable and Equitable Development (40.8, 40.22)

IDRC produced a report (October 1993) entitled "*Reporting on Sustainable and Equitable Development - Project Paper No. 1*", which presents an overall conceptual framework for guiding the system of reporting on sustainable and equitable development. This has led to project development in this field with IUCN.

E. Electronic Atlas of Agenda 21 (40.2, 40.b, 40.22)

The production of an Electronic Atlas of Agenda 21 (ELADA-21) has been initiated. It is intended to serve as a decision-aid tool for national managers for developing environment policies, monitoring the impact of their implementation, and sharing models and experiences with other nations. The initial component of the project will develop an Atlas shell as well as an application dedicated to Chapter 15 of Agenda 21 dealing with "Conservation of Biological Diversity". The Biodiversity volume will include: a geographic database on CD-ROM for monitoring indicators of biodiversity; two multimedia scenarios on biodiversity; and associated tools to complete the Atlas functionally. The long term objective of the Electronic Atlas is to cover all forty chapters of Agenda 21. It would record specific successes (and failures) of models of sustainable development in open computerized fora for use by those involved in the implementation and follow up of Agenda 21 programs.

F. Sustainable Development Network (40.2, 40.b, 40.25)

IDRC is collaborating with UNDP's Sustainable Development Network (SDN) initiative. It played an active role in the UNDP Workshop on the SDN in 1992, following which it developed a collaborative partnership with UNDP for the elaboration of a "starter kit" of information and communication hardware/software, products and services for use within national SDNs. Two national initiatives - the Pakistan SDN and the Indian SDN - are currently under discussion.

IDRC will also support (in 1994-95) a series of workshops to link national and international initiatives involved in setting up environmental information systems and services. The output will assist in the development of guidelines and policies for national environmental information systems.

G. Healthnet (40.5d, 40.10, 40.25)

An international conference is planned for 1994-95 to explore future potential for the HealthNet initiative (an international collaborative network for health communication research and technology development) which aims to contribute to the capacity of researchers and professionals in health and health-related field to effect change through the provision of access to information and communication capabilities.

H. International Multimedia Consortium for Environment and Development (IMCED) (40.2, 40.3, 40.b, 40.22)

IMCED, a partnership activity that is being supported by IDRC, brings together various organizations from a variety of domains that are interested in using the latest multimedia technology to inform, educate, and involve decision-makers on issues of environment and development. It aims to develop a range of products on different topics including water and irrigation; forest and timber management; and pollution and industrial waste for a wide range of educational and training levels. In this regard, IDRC is supporting the production of a prototype CD-ROM, focusing on river basin management and the impact of the Aswan High Dam in particular. The prototype will demonstrate the potential effectiveness of this approach.

9. IIED

IIED's post-UNCED work involves all aspects of the Institute. For example:

- Liaison and policy advice, at all levels and through IIED's many and long-established links and networks, from community to inter-governmental; NGO and government; the Environment Committee of the DAC, particularly on Capacity issues; the Earth Council; UNDP, the UN University (UNU) and other Un agencies; the World Bank; the Commission on Sustainable Development; the Business Council for Sustainable Development; the World Conservation Union (IUCN), and other NGO coalitions. It is these links with the many different players, and ITED's capacity to be able to provide and facilitate policy advice grounded in real community experience, which provides IIED with its Post-Rio niche.

- Human Settlements provide major advice on policy, approach, people and institutions to the main NGO follow-up to Rio, the Manchester Global Forum, as well as advising the relevant UN agencies dealing with human settlements on follow-up.

- Drylands are closely involved in the Desertification Convention, through advice to a number of governments, and through participation in the Experts Panel.

- Sustainable Agriculture have been involved in advising government fora on agriculture and resource management and gender and water related aspects of Agenda 21.

- IIED's European Commission unit is to provide substantial advice on Agenda 21 implementation through the European Union, and through international NGO meetings.

- The Environmental Planing Group (EPG) have been involved through local and national sustainable development strategies work. In future there will be a particular emphasis on capacity strengthening and institutional development.

The Commission of the European Communities

In January 1994, IIED will sign a two year framework agreement with the Commission of the European Communities. The aim is to provide policy support for the implementation of the UNCED agreements through the new European Union's development cooperation programmes. The agreement will focus on four main themes: first, the strategic policy issues (e.g. evaluating the implications of Rio and Maastricht for EC aid policies), second, the sectoral policy issues (eg. sustainable agriculture, tropical forestry and desertification), third, the tools for sustainable development (eg national sustainable development strategies) and fourth, promoting a collaborative network of European policy institutes working on international sustainable development issues.

The Director of the Institute, Richard Sandbrook, has recently been elected as an IUCN Regional Councillor. IIED will be seeking to establish a Secretariat to serve this function. The Secretariat may serve both an information and Rio follow-up role.

IIED aims to produce and target information to ensure that people make informed policy choices. Its Information and Communication work is divided into two main areas:

i) Information produced and disseminated as an integral part of the work of individual programmes, the so-called Programme Information activities; and

ii) Common or institute-wide information production and services, the Common information activities.

I) Programme Information

All programmes publish and distribute a combination of research papers, journal articles, policy advice, reviews, books, essays, networking and knowledge generation tools, and key concepts and thinking from experts in the field. It should be noted however that 'information and communication' activities are integral to IIED's research and policy approach and methodology - the published report is only one aspect of information within a programmes' work. Research review groups, steering groups, working seminars, advocacy fora, institutional development, training, action networks, and liaison, all constitute key components of information and communication work.

IIED's main (and planned) outputs include:

- *Environment and Urbanisation,* produced bi-annually by the Human Settlements Programme, which enables Third World researchers, teachers, NGO staff and professionals to write about their work and present their ideas. During 1994/95, the programme will be publishing a series of 8 papers on participatory techniques and methods in English, French, and Spanish, and is currently writing a new "Global Report on Human Settlements" as the main background document for Habitat II;

- *Haramata*, a quarterly newsletter of the Drylands programme, written in English and French to help bridge the communications gap between English and French-speaking Africa where it serves as an important networking tool for NGOs and researchers. Each issue of Haramata is accompanied by in-depth Issue Papers and Dossiers. Drylands projects for 1994/96 strongly integrate debate, communication and information exchange, advocacy, and publication in their research approach, a process which is described as "going beyond the report";

- The Sustainable Agriculture Programme recently launched its new *Research Series*. Volumes in the series highlight the programme's collaborative research work in resource-conserving agriculture, indigenous knowledge, the role of wild foods in agricultural systems, and participatory watershed management;

- Both the Sustainable Agriculture Programme and the Environmental Economics Programme, publish papers in their own *Gatekeeper Series* which highlight key topics in their respective fields. These review selected issues of contemporary importance and draw conclusions of special relevance to policy-makers, researchers and planners;

- The Drylands Programme produces *Discussion Papers*. These are working documents directed at academics and researchers. These are not subscription-based publications but are sold or distributed free to specific individuals and institutions who request them;

- The Sustainable Agriculture Programme produces *RRA Notes* written by and for practitioners of rapid and participatory rural appraisal. They describe field experience and are an important tool for information exchange on issues of practical and immediate value. A recent survey showed a readership of 9,400 in 65 countries. Other major information activities include the planned Resource Centre for Participatory Inquiry, and networking and support to institutions in Nigeria and India;

- The Environmental Planning Group produces a series of guides on environmental assessment and natural resource and sustainable development strategies, and have produced a number of environmental studies and synopses. EPG runs the Register of Environmental and Sustainable Development Expertise, and collaborates with IUCN to provide the International Environmental and Natural Resource Assessment Information Service (INTERAISE). This consists of a computerised database of country environmental and natural resource assessment documents, selected regional directories, a documentation centre, and an information referral service. EPG will be collaborating with selected southern institutions to establish and support parallel documentation and Interaise information services;

- Environmental Economics is developing a new publication series under a joint programme of Collaborative Research in the Economics of Environment and Development (CREED), in cooperation with the Institute for Environmental Studies Amsterdam, and a number of southern research organizations. The new publication series provides a major new vehicle for dissemination of research results form the south;

- Forestry and Land Use have a number of major publication proposals including a follow-up to the highly influential "No Timber Without Trees", and a planned "Forest Certification Handbook"; and

- *Tiempo*, the quarterly climate change newsletter, produced in association with the University of East Anglia.

Summary of Information, Networking and Communication Components in Programme Projects for 1994/95

The following projects within each programme have strong Information, Networking and Communication components:

LEEC: Core Support, Forest Biodiversity Management, Paper Products and Recycling, Hidden Harvest (with SusAg), Sustainable Use of Wild Harvests, Economics of Land Degradation.

EPG: Environmental Assessment, Resource Assessment and Land Use Planning, Strategies for Sustainable Development, Institutional Support to Ghana EPC, Project Cycle Services, Water Management, and Information Services.

HumSett: Participatory techniques and methods in urban areas, Aid and Urban Development, The Global Report on Human Settlements, Environment and Urbanization, and Cities and Sustainable Development.

Drylands: Soil and Water Conservation, Pastoral Land Tenure, Community Conservation, Soil Nutrient Recycling, MARP Training Sahel, Post Rio Convention on Desertification, Networking, and Information.

Forests: Shifting agriculture, Forest incentives, Paper cycle, country profiles, Land use sustainability, Vietnam land use working party, PNG NGO's Nigeria Cross River State Forest Strategy, Forest resource accounting, Training in forest policy, NSDSs, Forest Policy that works, and Forest Certification Handbook.

SustAg: New Horizons, The Hidden Harvest (with LEEC), Policies for Resource Conserving Agriculture, Drawers of Water, Sustainable Agriculture in Europe, Asian Regional PRA Workshop, PEC conference, NGO institutional support, Participatory Training, Video projects, Networking and support to India and Nigeria, Resource Centre for Participatory Approaches, Gatekeepers, and RRA Notes.

II) Common Information Activities

IIED's Common Information Activities fall into five main categories:

- Services to Programmes: Design and production of publications by the Information Office;

- Information referral and enquiries: hundreds of enquiries are serviced annually, from the general public, the media and specialists. The Information Office leads in answering these enquiries and referring them on. The IIED Library and Programmes also help to service these external needs;

- Institute-wide information, for making the sustainable development debate accessible and popular; for creating and encouraging a constituency; and for Institute publicity and public relations. This category includes the Perspectives newsletter with a general readership base of about 5,000 which continues to grow. The newsletter provides a platform for writers from both South and North to exchange information on environment and development issues. It has produced special issues on the Earth Summit. This category also includes the highly influential *Brundtland Series; Our*

common Future - A Readers' Guide, Defending the Future, and Facing the Future. Other common publications are aimed at specific policy fora, for example, *Policies for A Small Planet, and Governance for Sustainable Development - A Southern Perspective*. The *IIED Annual Report* is part of the common information function, along with brochures, catalogues, and other promotional material;

- **The Bookshop** which liaises with Earthscan (which was formerly an editorially independent publishing house owned by IIED), and promotes sustainable development generally through the catalogue and sales and promotion of IIED publications and other selected books; and

- **Information Projects** - IIED has run and is developing an increasing number of specific information projects, including the **Sustainable Development Library, the Education for Sustainability Forum** (ESF), and the **Multimedia Project**, and the **Resource Centre for Participatory Approaches.**

Future Information, Communication and Education Activities

IIED has recently conducted a comprehensive internal review of its information activities and has concluded as follows:

- There is a need to improve the quality of what IIED produces in respect of its diversity, marketability, accessibility, and distribution to various target audiences;

- There is a need to move from being a 'producer' of ideas, data and reports to being a 'communicator'. This would involve a move from one-way flows to a much more organised set of 'two-way' flows; and

- There is a need to initiate new and innovative information partnerships, with like minded institutions.

Information Project 1: The Grey Disk

The intention is to bring together a ring of like-minded policy institutes into an information consortia so as to pool their grey literature (literature that is neither in book or other commercially published form) and put this onto high density computer disks, and

into electronic networks for wide distribution. Discussions are being held with the Earth Council, and a number of other organisations.

Information Project 2: The Sustainable Development Library

A second phase of the Sustainable Development Library is under proposal, and is based on the successful distribution of 100 titles to 500 targeted organisations in 1992/93 (450 of which wrote to offer their deep appreciation).

The next phase of the library will be to draw a catalogue of available texts for distribution to 1000 plus institutions and individuals, and for them to select a list against a sponsored booklist.

New criteria for choosing recipients are being drawn-up, covering NGOs, government department and universities. The producers of texts are being broadened from Earthscan Publications Ltd, and IIED, to hopefully include organisations such as Panos, Zed Press, Oxfam Press and others. The catalogued list will be selected by an international 'jury' meeting once a year. Each potential recipient will be sent the catalogue with an allocation of 'purchase points' for free purchase.

Information Project 3: The Multimedia Scheme

This is a joint project involving IIED, WWF UK, the World Bank, Central T.V., IDRC, and the Television Trust for the Environment. The project has been in a development and prototype phase for 12 months and is evolving rapidly. The project was developed in order to design a computer-based multimedia package (CD-ROM and manual) for training mid-level management in the implications of Agenda 21. The first prototype phase is looking at water management issues through a comprehensive case study of the Aswan High Dam in Egypt. A prototype disc is being produced, and early versions have been demonstrated and discussed in the UK, US, Canada, and Sweden. The next stage is to bring the prototype up to the level where it can be evaluated with trainers and educators, with a parallel process to bring in Egyptian partners. IIED will be playing a lead role in research coordination and collaboration.

Information Project 4: The Resource Centre for Participatory Approaches.

A proposal is under preparation for the development of an international resource centre for participatory approaches and methods. IIED continues to service a large network of practitioners and researchers by answering queries, giving advice and supplying specific materials, on average receiving some 25 requests each week for

information. The Centre will house a reference library of the key literature, a comprehensive collection of training materials and teaching aids, and a trainers' register. Similar centres will be established with partner institutions in Mexico, Kenya and India.

10. IISD

IISD is committed to the concept that information is a powerful resource to support sustainable development. The goal of its information work is to deliver appropriate and timely information to decision makers at all levels of society. Below is a summary of the major post-UNCED activities undertaken by IISD.

A. Sourcebook on Sustainable Development

To achieve this goal, IISD has published a Sourcebook on Sustainable Development: a selective guide to key materials and sources of information on sustainable development. Utilizing the Sourcebook concept, and broadening the scope, content and organization of information sources captured, IISD is creating a Sourcebase on Sustainable Development. This product will be disseminated to a world-wide cross sectoral audience in a variety of print and electronic formats, including diskettes, CD-ROM, and online databases. The Sourcebase is intended to be a "filter" on the information ocean: a selective guide to appropriate and relevant materials on sustainable development. The information sources which will be emphasized will be those which cross disciplinary boundaries to cover the interrelated processes of the economy, the environment, the needs of people, the decision making process, and the effects of all these on development.

Components of the Sourcebase:

- Actors and Supporters of Sustainable Development;
- Sustainable Development Initiatives Tools for;
- Sustainable Development Communications for;
- Sustainable Development Audio-visual Resources; and

- Electronic Resources Publications Directory.

The Sourcebase is now open on a trial basis to Canadian users of Web, the Canadian node of the APC network.

B. Information Centre

The Information Centre (IC) is a critical component of the Sourcebook vision, supporting it in a number of ways. Through the IC, appropriate and timely print and electronic resources are identified, reviewed and selected for inclusion in the database. As use of the database grows, the IC will serve as a critical document location and delivery function: users who have difficulty locating materials referred to in the Sourcebook will be able to turn to the IC for assistance. The IC also now serves a critical research and referral function. The Sourcebook targets the key information sources, but researchers can turn to the IC for assistance with more in depth information research. Where the request falls outside the scope of our expertise, we refer users to other leading information centres and clearinghouses.

C. Canadian Sustainability Initiatives

The Projet de Société is Canada's multistake holder process to develop a national sustainable development strategy. IISD worked with the Projet's Document and Information Committee (DISC) to create an information system which would support the work of the Projet. One of the principle tasks assigned to DISC was to examine Agenda 21 and the Rio conventions in order to : capture the essence and raison d'etre of Agenda 21; identify Canada's policies and positions with respect to UNCED objectives; and identify what sectors of Canadian society are doing, or are planning to do, which is consistent with the objectives. To fulfil this task, DISC prepared a 400 page chapter by chapter assessment of Agenda 21, of Canada's commitments at UNCED and Canadian progress towards a sustainable society.

IISD conducted a survey of Canadian government departments, NGOs, business, industry and other sectors to identify work in Canada which supports sustainable development. The data from this research was combined with the Agenda 21 assessment onto a diskette, using the latest hypertext technology. The technology makes it possible to review the analysis of a given chapter, then consult the database for current initiatives related to that chapter, and finally access the addresses and other contact information for the organizations undertaking the work. This product will provide the framework and context for sustainable development action in Canada.

In January, a working group met at IISD to consider the future of the Projet de Société information system, and similar initiatives which identify and track projects related to environment and development in Canada. IISD agreed to take on the role of

developing this project as a follow up to its work with the Projet de Société. By working in partnership with other agencies who are already monitoring the activities of their sectors, IISD will be able to build electronic linkages between these information bases, leading to a comprehensive picture of Canada's transition to a sustainable society. This effort is important not only within Canada but to ensure knowledge is available outside the country of Canada's activities.

D. Youth Sourcebook on Sustainable Development

For the last year, IISD has engaged in an exciting process of working with youth organizations throughout the world, to create a guide to sustainable development issues of importance to youth. This Sourcebook will include a directory of Youth development organizations around the world, and an index to critical resource materials. The publication will be available in the Spring of 1994.

11. IUCN

Information has always played an important role in IUCN. From its inception, IUCN has served as a forum for the exchange of scientific and technical information. Working in collaboration with hundreds of international, nongovernmental and governmental organizations, it has published over 1100 monographic titles and 92 serials. At present, the IUCN Communications Division publishes over 70 titles per year and 2 regular periodicals. This output is complemented annually by: 5 Commission newsletters, 6 Programme newsletters, 5 Regional newsletters as well as an average of 200 scientific and technical reports from projects and field activities.

Since the IUCN General Assembly in Perth, Australia, in 1990, IUCN has given increased support for communication and information activities. Taking a strategic approach, IUCN is developing a methodology for using the communication process and tools to achieve maximum results in disseminating and sharing its information.

On the side of information management, work has begun to consolidate and network its information resources and build an information culture within the Union. The recently re-established Library fields over 400 queries per month from headquarters, regional and country offices, members and partners as well as external researchers and students. Working with the IUCN Programme, jointly managed documentation collections have been developed which permit access to more than 30,000 records. The concept of jointly managed information systems is being extended to IUCN's regional and country offices through the creation of IUCN Depository Libraries. To facilitate

networking and resource sharing outside the IUCN community, the Library initiated full publication exchanges with partners, UNEP, WRI and WWF; became a Special Sectoral Source of UNEP Infoterra; introduced data exchange with the World Conservation Monitoring Centre (WCMC) and started the Geneva-area Roundtable on Environmental Information and Documentation (an informal network of 29 IGO, NGO and Swiss organizations). Links to electronic networks (Association for Progressive Communication (APC) network via GreenNet) and Internet have been established and are used to exchange messages and upload/download information.

See tables on pages 60- 62 for specific examples of IUCN activities related to information management.

Agenda 21, Chapter 40	Corresponding IUCN action	Partners
A. Bridging the data gap		
40.8 Improvement of data collection and use Also related to: 40.22 Production of Information usable for decision-making	**IUCN supports the World Conservation Monitoring Centre** WCMC provides a World Biodiversity Information Service in support of nature conservation, in particular; species and the processes by which they are threatened; the extent, condition and management of the world's ecosystems; protected areas and other biologically important sites.	IUCN UNEP WWF
40.9 Improvement of methods of data assessment and analysis Also related to: 40.6 Development of indicators of sustainable development 40.10 Establishment of a comprehensive information framework 40.11 Strengthening of the capacity for traditional information	**Programme on strategies for sustainability** Focusses on learning from experience in a wide range of strategy types, including National Conservation Strategies, National Environmental Actions Plans and Tropical Forest Action Plans and other strategies at the national and local levels; developing tools to assist field practitioners in developing countries. Programme being developed with IUCN's Commission on Environmental Strategies and Planning.	CESP IUCN
	Monitoring and assessing progress towards sustainability Seeks to develop, test and adapt a practical Handbook on Monitoring and Assessing Progress Towards Sustainability, accompanying participatory methodologies and training modules. Studies and a synthesis of lessons learned will document the monitoring and evaluation (M&E) experience, including consideration of appropriate indicators at the national and local level. These tools will be refined, Tested and adapted in the field in Nepal, Zambia and Colombia.	IDRC IUCN
40.11 Strengthening of the capacity for Traditional information	**Indigenous peoples and sustainability** Seeks to strengthen the role of Indigenous peoples in the formulation and implementation of sustainability strategies, including the use of traditional knowledge as an indispensable tool to support sustainable use of resources. The IUCN Inter-Commission Task Force for Indigenous Peoples has produced draft case studies and A Guide for Action is being developed.	IIED IUCN

Improving availability of information		
40.22 Production of Information usable for Decision-making	**Agenda 21 and the UNCED proceedings** Brings together all documents in an easy-to-use set of bound volumes. Of particular value is the volume on Agenda 21: Earth's Action Plan - annotated / edited By Nicholas Robinson of the IUCN Commission on Environmental Law.	CEL IUCN
40.24 Development of Documentation about Information Also related to: 40.22 Production of information usable for decision making	**International Environmental and Natural Resource Assessment Information Services (INTERAISE)** Through the periodic publication of a directory, maintenance of a documents delivery service and development of collaborating and regional centres in Africa, Asia and Latin America, the project seeks to identify and disseminate key information on environmental assessments, strategies and plans to those who need it in developing countries and in the development aid community. A new product: an annotated Director of Guidelines on Environmental Assessment and Environmental Impact Assessment will also be produced.	IIED IUCN WRI
	IUCN Library Sourcebook for Conservation and Biodiversity Information This project seeks to create a "meta-database" on information resources within IUCN, its offices and members worldwide as well as its partners - UNEP and WWF.	IUCN UNEP INFOTERRA

40.25 Establishment and strengthening of electronic networking capabilities.	**IUCN seeks to make information more freely available and as accessible as possible** IUCN's Communications Division both promotes and uses the emerging electronic networks to disseminate information to the widest possible audience. Included are: the development of electronic conferences; directories and inventories of available information; support for IUCN offices and members to link to networks and general conscientious raising of the value and importance of participation.	IUCN WWF
	IUCN Environmental Law Centre and IUCN Library cooperation with the consortium for International Earth Science Information Network Will help maximize use of IUCN's information resources by providing information on-line via the Internet.	CIESIN IUCN
	Sustainable Development Network in Pakistan This pilot project seeks to combine electronic communication, face-to-face meetings and other means of communication to link sources and users of information on sustainable development in government, research organizations nongovernmental organizations, grassroots and entrepreneurial organizations on a global scale. SDNs foster informed dialogue and communication to empower stakeholders in the development process.	UNDP IUCN
40.26 Making use of commercial information sources	**Aquatic Sciences and Fisheries Abstracts (ASFA)** A collaborative effort on the part of the UNEP Oceans and Coastal Areas Programme, the IUCN Library and the IUCN Marine Programme, whereby the Library prepares input for UNEP and IUCN marine-related documentation for ASFA and in so doing helps facilitate access. Under a proposed 2nd phase, attention will focus on developing capacity within the UNEP Regional Seas institutions to become input centres.	UNEP OCA/PAC IUCN FAO IOC UN

12. IWTC

Placing IWTC's work within the context of Agenda 21, there are specific programmatic linkages in many chapters, but IWTC has a particular interest in Chapter 24: Global Action for Women, and in Chapter 40: Information for Decision-Making and "providing local communities and resource users with the information...they need...[and] applying...indigenous knowledge and approaches when appropriate"(Agenda 21: 40.11). These issues are addressed within IWTC's programme as follows:

1. Ongoing programme activities...

i) IWTC has produced two special issues of The Tribune on environment, one before Earth Summit and one afterwards.

ii) IWTC has identified environment as a primary collection area within its Resource Centre, which also provides information services to UNIFEM and the women and development community. A particular emphasis is placed on the collection of fugitive material as well as environment-related gender analysis and participatory training activities. The Resource Centre regularly responds to requests for information on environment and tracks the environment-related activities of other women's groups in Asia, Africa, and Latin America through monitoring more than 600 periodicals received from these groups. IWTC prepares annual updates of a selected bibliography on women and environment first prepared in 1991.

iii) In its organization and networking files, IWTC tracks "who's doing what" and "what's in the pipeline" among the various women and development groups who are working on environment.

iv) In Women, Ink, a project to market and disseminate women and development publications worldwide with a special emphasis area on distributing information written by women in the South, environment is one of the key collections (and also one of the most popular in terms of sales).

2. Emerging arenas for action: objectives and activities

i) To make possible the participation of women, particularly low-income women in rural and urban areas, in promoting and shaping appropriate action towards sustainable development, and to promote local "ownership" of Agenda 21, IWTC will re-package relevant portions of the Agenda mandate to make it more accessible to groups working at community level. Among the initial set of information activities are:

a) Women and Environmental Action Clip Art Book. IWTC uses visuals to enhance the accessibility and appeal of materials to groups with limited or no reading ability and to present positive images of women as development actors. Nowhere is the need for positive images greater than in the scientific and technical fields. Because of the interest expressed by so many groups worldwide in these graphics, IWTC develops clip art books to enable other groups to use these images in their own publications.

b) It's Our Move Now: Women Moving Forward with Science, Technology and Environment Agendas. Participatory training activities and community action ideas which move policy into action using both the Forward Looking Strategies and Agenda 21 as a basis for action.

ii) To promote and make visible the visions and alternative processes proposed by women in the shifting of current paradigms. Particular attention is being given to the roles and contributions of poor women who, although among the most marginalized, possess a unique repository of indigenous knowledge and technology which are vital in the re-casting of processes for sustainable development. Specific activities planned to date are:

a) Reclaiming Our Own Technologies, An issue of The Tribune focusing on women's indigenous knowledge and technology to be developed in collaboration with ITDG and with particular emphasis on the "Do-It-Herself" (2) project. We are exploring ways to expand this project into a larger activity.

b) The Vision-Making Kit. A series of participatory activities to use with women at community level in imaging different future "sustainable development" scenarios. This is to be part of the "Tool Kits for the 95 Conference" and will form the basis for a larger post-95 programme.

iii) To use the occasion of the 1995 UN Fourth World Conference on Women in Beijing to mobilize increased collaboration and action on gender, science and technology within the context of sustainable development. A beginning point has been the identification of points of concurrence between Agenda 21 and the two major policy documents being reviewed (the Nairobi Forward Looking Strategies) and shaped (the Platform for Action) in the preparatory process for the 95 Beijing conferences. The initial set of activities include:

a) Creation of a consortium of gender, science and technology organizations and networks to work together during the preparatory process on several agendas. Together with UNIFEM, IWTC has begun a consortium-building process to promote such activities as information exchange, joint advocacy efforts, national and regional level activities and joint planning for the Once and Future Pavilion at Beijing. The Pavilion is intended as a multi-cultural and multi-generational celebration of women's traditional knowledge while at the same time suggesting a process for envisioning a different future.

b) Development of a communication strategy to promote dialogue among Consortium members that will include the use of fax and E-mail (planning among the different networks and regional focal points will take place through a science and technology E-mail conference).

c) Compilation of abbreviated mandates related to science, technology and the environment has been extracted from the Forward Looking Strategies and, with the Agenda 21 extract on women's issues published earlier by UNIFEM, is part of the "advocacy tool kit" for use by women's NGO's in their advocacy efforts during the preparatory process for Beijing.

iv) To create linkages among individuals, organizations and networks working at different levels, from different institutions, and from distinct resource bases to identify areas of mutual interest and collaboration in the fields of science, technology, and environment.

a) Once and Future Consortium. A consortium of gender, science and technology organizations and networks interested in re-casting the present science and technology paradigm in a more holistic, earth-friendly way and which seeks, through an integrated process, to build linkages between indigenous technology and the formal science disciplines. Following up on the initial organizing efforts of IWTC and UNIFEM, the Third World Organization of Women in Science (TWOWS) will serve as the Secretariat.

b) Development of an organizational database on gender, science and technology, a project initiated with UNIFEM in early 1993, and one to be added to throughout the planning process for the Once and Future Pavilion. The database is to be a shared resource among primary collaborating organizations, and is seen as the first of a series of linked databases.

c) Directory of Gender, Science and Technology Organizations is being developed based on the database and will appear as part of the post-Beijing Once and Future information resources series. In June, 1994, a preliminary organizational directory will be published by UNIFEM.

d) Women and Environment Information Centres Network. IWTC is working with INDRA in the Netherlands to pull together a network of the women's information centres working on environment. This network was first discussed at a 1992 meeting in Amsterdam of ten international women and development networks working in environment.

13. RIVM

By far the most important, from the perspective of the present meeting, has been the start of cooperation between RIVM and UNEP in 1993. The working programme relates in the first place to assessment and reporting components of UNEP's work.(40.22). A draft framework study for global and regional reporting (40.10) is being compiled as an input for consultations, as well as pilot studies in various areas in order to make the discussions more concrete. Pilot studies are being prepared on fresh water, (ch 18) land use and land degradation, (ch 10 and 14) spreading of toxic chemicals, (ch 19) and urban air pollution (ch 9). Obviously, a network of scientific institutes is an important element of the reporting and assessment system that is being envisaged. Secondly, and more related to UNEP's programme line on data management, projects are being carried out on the environmental application of land use information (ch 40.8).

Support to specific programmes, using models, is being continued and expanded. First example to be mentioned is the support to various working groups of the IGBP, on the basis of the IMAGE 2 integrated model of climate change and the EDGAR global database of emissions of greenhouse gases. The IMAGE 2 model is an integrated model in the sense discussed above, and the RIVM will this year make it accessible in various regions of the world. Second, the continuing support to international negotiations on transboundary air pollution in the framework of UN-ECE, on the basis of mapping of critical loads of ecosystems, continues and a similar set-up is currently being implemented in Asia.

Although RIVM focuses on the support to international organisations, it is engaged in providing advice to specific countries or regions on the possible compilation

of integrated policy-oriented reports. Recent examples are the national government of India and the Chinese regions of Qangzhou and Chongqing.

14. THE ROCKEFELLER FOUNDATION (LEADnet PROGRAM)

In accordance with the principles outlined by Agenda 21, LEADnet has been created to contribute to progressive change in ecosystem analysis by bridging the data gap between the North and the South, transferring technological "know-how", establishing communication networks, and strengthening the problem-solving capability of individuals and their communities.

Implementation of LEADnet

Using present telecommunication and computer technologies, LEADnet is attempting to close the information "gap" between individuals and institutions in developing areas and their global neighbours. LEADnet has been designed to ensure equitable access to new ideas and technologies. It operates from two primary Internet nodes in New York and Thailand. As a result, each LEAD country will have access to LEADnet through their connection with the primary nodes. The LEAD Institute, temporarily based in New York City, can be thought of as a "LEADnet Service Centre" and is dedicated to facilitating network administration and the systematic implementation of LEADnet in all the National Programmes.

Instead of creating a centralized system - operated solely by the New York and Thailand - LEADnet transfers information and communications technology directly to indigenous staff in LEAD Thailand, China, CIS, India, Indonesia, Nigeria, Mexico and Brazil. Each National Programme is staffed by an Information Officer (IOs) who is responsible for implementing and maintaining the LEADnet system in their respective country or region. Each Information Officer is trained to help to solidify systematic and compatible approaches in implementing the LEAD programme.

As part of the LEAD programme, each associate receives a computer system and can gain access to the Internet through their national programme. Associates may utilize the LEADnet services in the following manner:

A. General Information Retrieval and Exchange

i) Users may broadcast his/her information inquiries to other LEADnet members and/or to the Internet where users who have access to the information requested may assist in the response. This will strengthen the LEADnet community -- broadening the perspective and educational exchange of each user. National Programme Directors (NPDs) and Information Officers (IOs) also encourage users to assist in these inquiries and network with each other.

ii) Information inquiries may be sent to directly to the IOs and the LEADnet offices in New York and Thailand where there is direct access to Internet resources. They are responsible for completing an information search through their database and sending it to the back to the associate/user as soon as possible.

iii) The International Development Research Centre (IDRC) of Canada, as one of the sponsors of the LEAD programme, and Deutsche Gesellschaft fur Technische Zusammernarbeit (GTZ) of Germany have agreed to provide information retrieval services to LEAD members. Inquiries on a vast array of topics may be sent directly to IDRC or GTZ via the LEAD Institute in New York. This service has been available since September 10, 1993. All inquiries can be sent through E-mail, fax and regular mail.

B. On-line Services

LEADnet provides its users with a variety of on-line user services. These services build upon the environment and development basis of the LEAD programme and attempt to address user needs. For example, the LEADnet node in New York can provide the on-line user with the following information:

- LEAD Database (personal profiles of LEAD associates and staff);
- LEADLINK (a database created by LEAD associates for the exchange of information on professional interests in environment and development);
- LEAD programme documentation;
- LEAD programme training materials for International Sessions;
- LEADnet training materials for Information Officers;
- UNCED documentation (developed by IDRC on CD-ROM);

- World Resources Database (developed by WRI); and
- Global Data.

In Thailand, the user can locate additional information:

- Dialogue Compendex Plus (Engineering Information);
- Energy and Environment Database;
- Environment/Energyline Database;
- ERIC (Education Resources Information Centre);
- Immunology & AIDS Database;
- The Environmental Safety Library;
- Tones Plus (Toxicology, Occupational Medicine & Environment); and
- Toxline Database.

In addition to its on-line database, LEADnet is integrating multi-media technologies with the LEAD environment and development curriculum. This service promises to provide users with a wide range of educational opportunities. Unconfined to a university classroom or research institution, LEADnet's multi-media system will offer an interactive and interdisciplinary learning experience. In addition, Geographic Information Systems (GIS) and modelling techniques will be developed to create dedicated support systems capable of presenting various impact scenarios and interactive case studies to aid in regional, national, and international decision-making.

Both GIS and multi-media learning technologies are a crucial part of the LEAD programme curriculum. Once this multimedia system is available on-line, it will serve the LEAD programme as a portable case study library for research and development in the field of environmental planning. This programme can also be used by a wider audience as a self-learning and research tool. The proposed multimedia system will create a powerful teaching technology which is systematized, comprehensive, and accessible. The technology is user-friendly and designed to meet users' diverse needs. Its overall capability and purpose are limited only by the imagination.

15. UN DPCSD

The primary task of UN DPCSD is to collect, systematize and make available information on the implementation of Agenda 21, cluster-by-cluster, in conformity with the multi-year programme of work adopted by the Commission on Sustainable Development. It is anticipated that this may be more directly linked to issues of indicators (paras 40.6-40.7) in the future, pending decisions to be taken by the Commission. Full account of the DPCSD Electronic Exchange of Information Programme is given in Annex II.

16. UNIFEM

Through UNIFEM's Advocacy Facility, a series of Source Books are planned for publication and dissemination that seek to give women users a basic understanding of the range of technological options and sources of expertise available to them in the energy sector. The books will cover energy and environment technologies of high relevance to women's work and enable women to dialogue with technicians and to make their own decisions about appropriate technology choices.

Some Programme Initiatives

A. Asia and the Pacific

A participatory process in which UNIFEM brokers relations between and among different sectors and groups in society began with a series of peasant women summits in South Asia regarding environmental degradation. In the absence of an indigenous perspective in current agricultural planning, this process sought to raise awareness and recognition of the knowledge and expertise of women farmers about the land, the environment and social and cultural conditions of women food producers. The process took the experiences and perceptions of women farmers progressively up to the highest policy and planning levels, the determinations taken there brought back to the women for further deliberation. Peasant women came together with planners, policy makers and researchers at the national level followed by a regional summit. This culminated in peasant women representatives being sent to Rio. UNIFEM's programme continued to support follow-up meetings, the information from Rio disseminated at national and local level meetings held to design country specific programmes. As a result organization around specific legislative issues is taking place, information sheets are being produced

and a regional network of NGOs has been formed to further communication and facilitate the dissemination of information. Video documentation of the meetings enables replication of the process.

B. Latin America and the Caribbean

An important component of UNIFEM's WED programme in the Latin America/Caribbean region is motivating and training women's groups in the use of radio and video to further communication on women as ecosystem managers and their role in the management of environmental resources. The production of audio-visual training materials will be use by change agents and women's groups, showing that explicit and environment focused gender training is essential for the success of any sustainable development initiative. The final product will assist target audiences in transforming WED policy into practice, strengthening micro-macro linkages.

C. Africa

UNIFEM's work in Africa starts by bringing together environmental NGOs, women's groups, research organizations and other potential partners to solicit their agenda as a way to define the Fund's assistance to these groups. It aims to increase the visibility of women's concerns and expertise about the environment through the media. A number of successful initiatives, such as a multi-disciplinary community based project in Lesotho successfully mainstreamed within the Ministry of Agriculture participatory methodologies on needs assessments and village development planning. Training for grass roots women's groups in environmental assessment and management, using participatory methods initiatives are planned.

17. UNDP

UNDP has been given the lead responsibility at the Earth Summit for capacity building to help developing countries formulate economic, social and environmental goals, plans, programmes and policies that lead to sustainable development. Fortunately, in 1989, UNDP had already initiated the Sustainable Development network (SDN) proposal as a tool to help developing countries move toward sustainable development.

SDNs are viewed by many governments as an indispensable tool for implementing national Agenda 21s. By adapting the SDN and by including it within Capacity 21 - UNDP's main response to the Rio summit - and by quickly launching about 15 national or regional pilot SDN projects, UNDP has been able to swiftly respond to Rio and begin directly assisting developing countries in determining the future of our planet. The main output of the SDN will be assisting these countries prepare national Agenda 21s.

SDNs At Work

SDNs combine electronic communication, face-to-face meetings, and other means of communication to link sources and users of information on sustainable development in government, research, non-governmental organizations, grassroots and entrepreneurial organizations on a global scale. Some examples of how SDNs work are scattered throughout this publication.

The SDN is more than an information network. SDNs foster informed dialogue and communications to empower stakeholders-those who stand to be directly affected by development- to become more active participants in the development process. Round table processes as well as public or community participation in decision making are examples of the type of consultation that a SDN encourages and becomes involved with.

A word about electronic communication

In the process of helping to build capacity for sustainable development by improving decision making, SDNs aim to facilitate access to the global communications network and knowledge base. This includes electronic messaging (e-mail) and electronic conferencing systems as well as computerized resources such as commercially available databases and information services (Dialog and other host services), research networks such as the InterNet - a global network of computers which links users to over 20,000 databases and to many other computer-based resources worldwide, etc.

SDN encourage the use and adoption of these technologies, or of locally appropriate adaptations such as bulletin board systems (BBS).

Sharing Computer resources by remote logging in, including access via InterNet, may not be feasible options for some developing countries and new SDNs may need help establishing alternatives to their existing systems. Other appropriate information technologies, including (packet radio/satellite) may also have a role to play.

Workshops

The SDN workshop held in September 1992, by UNDP, brought together 19 participants from developing countries, international organizations and NGOs, as well as technical specialists, to advise on the concept of the SDN and its future development. Workshop participants endorsed the SDN proposal and refined the concept. Copies of the workshop report have been distributed worldwide and can be obtained by writing to the director, SDN, at UNDP in New York.

Training and workshops help to enhance the ability of national SDN secretariats to operate on a self-sufficient basis, and to use appropriate management practices and technologies to do so. Workshops will be held periodically to help identify common problems and ongoing as well as special needs, and will help evaluate progress. They will also help to identify opportunities for funding.

SDN Starter Kits

UNDP provides a starter kit to support the establishment of each new SDN. The kit includes basic tools and resources to meet individual needs and circumstances of each SDN while ensuring longer-term compatibility with other SDNs. The kits include hardware, software, key databases, management tools, decision-support tools, and information on using consultative processes and are being developed in collaboration with the International Development Research Centre (IDRC) of Canada.

Progress update

Pilot SDNs have been launched in:

Africa: Angola, Chad, Tunisia
Asia: China, South Pacific (regional), Indonesia, Korea, Pakistan, Philippines, Mekong Committee (for Indochina)
Europe: Baltic States, Poland
Latin America: Bolivia, Guatemala, Honduras

By the end of the pilot phase over 25 countries will have been considered for SDNs. Feasibility studies will have been completed in most, if not all, with 8 proceeding to the establishment of working SDNs. By the end of 1993, as may as 40 countries could be establishing SDNs.

STATUS OF SDN COUNTRY INITIATIVES BASED ON THE PROGRESS REPORT TO END DECEMBER 1993

Category 1: Operational (7)

Africa	Asia	Latin America
Angola	Pakistan	Bolivia
	Philippines	Honduras
	S. Pacific	Nicaragua

Category 2: Feasibility Studies Ongoing on Completed: Financing Assured but Activities not yet Initiated (6)

Arab States	Asia	Latin America
Morocco	Korea	Mexico
Tunisia[2]	China	
	Indonesia	

Category 3: Prefeasibility and Feasibility Studies being organized in the Expectation Financing will be available for Full Operations (20)

Africa	Arab States	Asia	Latin America	Europe
Cameroon[1]	Egypt[2]	India[3]	Chile[1]	Estonia[6]
Eritrea	Lebanon[1]	Iran[1]	Colombia[1]	Poland[6]
Gambia	Sudan	Nepal	Costa Rica[1]	
Mozambique	Syria[1]	Thailand[4]	Guatemala[1]	
Zambia		Vietnam[5]		

1 Prefeasibility activities completed
2 Feasibility study completed
3 Feasibility studied financed by SDN: financing for full operations under consideration with IPF and IDRC and possible external contributors
4 Based on national financing
5 Activities will not commence until the status of a Mekong Committee based regional project is clarified.
6 Co-financing with USAID through CIESIN is under discussion
* Regional

Category 4: Requests for SDNs that are Inactive with no Immediate Prospect for Financing (34)

Africa	Arab States	Asia	Latin America	Europe
Cote d'Ivoire[1]	Saudi Arabia	Bangladesh	Argentina	Belarus
Ethiopia	Yemen	Mekong[2*]	Belize	Bulgaria
Ghana		Mongolia	Brazil	Latvia[1]
Guinea Bissau		Sri Lanka[1]	El Salvador[1]	Lithuania[1]
Kenya			Guyana[1]	Palestine
Madagascar			Panama[1]	Russia
Malawi			Peru	
Namibia				
Nigeria				
Senegal[1]				
Tanzania				
Uganda				
Zimbabwe				

Category 5: Terminated (1)

Africa

Chad

18. UNESCO

ENVIRONMENTAL INFORMATION IN UNESCO'S EDUCATION AND SCIENCE PROGRAMMES

UNESCO develops, promotes, co-ordinates a number of information systems, networks, data bases, etc., related to environment and contributing to selected chapters of Agenda 21, in particular:

A. In the field of education (chapters 25 and 36):

- innovative systems of knowledge transfer will be set up in the framework of the UNITWIN university twinning and of the UNESCO chairs projects; and

- educational information and documentation services are provided to member states, governmental and non governmental organizations.

B. In the field of sciences (chapters 31 and 35):

- the network of solar energy centres in the Mediterranean countries (MEDSOLAR) is in process of development;

- geodata networks will be developed to enhance the use of modern techniques in development planning, with priority given to Africa;

- information generated within he MAB programme will be communicated to researchers and decision-makers through more widely disseminated, streamlined and selective information means;

- inputs will be provided to the development of the proposed Global Terrestrial Observing System; and

- co-operation among humid tropical regions in the field of ecology and sustainable development of ecosystems will be fostered through promoting the exchange of information.

C. In the field of oceans and coastal areas (chapter 17) :

- marine science related activities will include interregional networks, e.g. the Interregional project on Coastal Marine Systems (COMAR);

- activities will be undertaken to narrow down the uncertainties about the role of the ocean in climate and global systems within the framework of the Global Ocean Observing System;

- special attention will be paid to the provision of information together with interpretation for decision-makers regarding oceans, seas and coastal areas in order to pave the way to measure for prevention of or the adaptation to expected climate and other changes and their potential impact; and

- regional data and information exchange networks will be strengthened with a view to supporting regional co-operation in marine science and coastal area management.

D. In the field of hydrology (chapter 18):

- special attention will be paid to promoting the exchange of data on the hydrological cycle, on the impacts of global and regional climate changes on water resources, etc; and

- a review and update of the data on river sediment discharges into the ocean will be made.

STRENGTHENING ENVIRONMENTAL INFORMATION IN THE FRAMEWORK OF THE GENERAL INFORMATION PROGRAMME

The Division of the General Information Programme has a special responsibility regarding the development of information, documentation, library and archival services, information networks and data bases in the Member States. Within this framework due attention will be paid to contributing to the follow-up of UNCED, in particular to the implementation of Chapter 40 of Agenda 21.

In order to achieve this objective, action should be taken at several levels:

- regarding the promotion of all available PGI products, in particular guidelines, directories, etc., which should be used/adapted when environment-related information systems and services are developed nationally or internationally;

- regarding the use and networking of information resources, networks, etc., developed or promoted by other sectors of UNESCO; and

- regarding the development of co-operation with other UN and international organisations in the field of environment-related information.

In particular ways and means will be identified to contribute to the development of the resources required for providing information support to environment-related decision-making, such as:

. information;
. software;
. human resources; and
. financial resources.

Activities are, therefore, planned as follows:

- Identifying target institutions potentially interested in the assistance to be extended by PGI:

  . acquiring listings and directories from the UNESCO units directly involved in environment related activities; and

  . identifying information and training institutions in the field of PGI potentially involved in environment related activities.

- Collecting and disseminating information on information resources available in UNESCO:

  . analysis of UNESCO databases taking into account the directories established by the Clearinghouse and the Science Sector, with a view to identifying those components, which have some relationship with environment. Bibliographic, factographic database (in particular databases on institutions and specialists) as well as statistical and project databases should be studied, defining the relevant data elements, the scope and coverage from the point of view of environment;

  . in a second stage the relevant databases will be analyzed quantitatively, in order to clarify the number of relevant records, i.e.; the usefulness of the given database for practical purposes; and

  . the results will be presented in a document for publication in form of a leaflet addressed to major institutions as well as in form of an article.

- Promoting the use of the software tools developed by UNESCO for the management of statistical and textual information: IDAMS and CDS/ISIS for processing environment related information:

  . identification of current users of the above software working in environment related fields;

  . clarification of the ways in which they use the software, including the data elements processed and major types of resulting products; and

. preparing an information leaflet on typical environment related applications for distribution to target institutions.

- Promoting the development of environment related information systems and services:

  . identification of UNESCO and in particular PGI guidelines that should be taken into account by those in charge of developing specialised environmental information systems and services;

  . identification of selected institutions and specialists with best experience in environmental information on the basis of PGI contacts; and

  . preparing an information leaflet on the above.

- Promoting the introduction of appropriate modules on environmental information in the training of information professionals:

  . collecting information from leading training institutions on the availability of this kind of training in the framework of their courses and obtaining the description of the relevant programme components;

  . identifying similarities and particularities of the above programme me components; and

  . preparing a short study on the above, with recommendations.

- Compiling an integrated environment related database form the existing UNESCO databases:

  . analyzing the differences among the same types of existing databases (e.g. institutional databases set up in different divisions, etc) with a view to clarifying the possibility of their combination into a single database of the given type; and

  . creating a pilot version of a UNESCO environmental database.

DEVELOPING ENVIRONMENTAL INFORMATION IN THE FRAMEWORK OF THE INTERSECTORAL-INTERAGENCY PROJECT ON ENVIRONMENT POPULATION EDUCATION AND INFORMATION FOR HUMAN DEVELOPMENT

The General Information Programme (PGI) has initiated action in co-operation with the above intersectoral-interagency project with a view to strengthening the capabilities of African governments at national and local levels, in environmental management and environment conscious human development.

Objective:

To sensitise and assist African decision makers at national and local levels regarding the planning and implementation of environmental management and environment conscious human development by the means of improved training and information.

Outputs:

1. Appropriate information support in form of databases and documents regarding the state of environment in the member countries of CAFRAD.

2. Environmental managers (at least 5 per country) capable to sensitise and train decision-makers regarding the problems related to environment, their consequences and the ways in which they should use information in order to improve environmental management.

3. Training centres (at least one per country) with appropriate manpower and equipment to deliver sensitisation and training sessions to decision makers on environmental management, paying special attention to the needs and use of relevant information.

4. An operational network for the exchange of relevant information, making use of available public means of data communication.

Activities:

<u>With a view to achieving Output 1:</u>

- development of a common methodology for collecting data on the state of environment;

- collecting data on the state of the environment, using the common methodology;

- analysis of the data with a view to identifying the major problems regarding the environment /sustainable development and their impact on the economic and social life of the countries;

- establishment of an inventory of the natural and environmental resources to be protected and promoted, with proposals regarding their more efficient management;

- identification of experiences, positive and negative results in the field of environmental management and related human development in the participating countries; and

- development of databases on the above matters for use by both trainers and decision makers.

With a view to achieving Output 2:

- definition of the target audience and of the major components of the training programme;

- analysis of the content and methods of training implemented with similar objectives in selected schools of international reputation, including courses offered in Arabic, English and French;

- preparation of curricula in harmony with the characteristics of the region, making use of the data bases and documents emerging from the activities related to Objective 1;

- discussion and finalisation of the curricula in the framework of an international expert meeting;

- organising a first experimental course for future trainers at CAFRAD; evaluation in co-operation with the participants; and

- implementation of a series of training courses for trainers from the Member States (3 courses: one in Arabic, English and French each), evaluation.

With a view to achieving Output 3:

- analyzing the computer and communication technology available, paying special attention to the possibilities and limitations in the institutions selected to host future training centres as well as to those of the national and local governmental authorities to be served with improved environment related information, and making best use of the experience gained and structures established by UNESCO in support of the creation and development of regional networks in Africa;

- specifying protocols, common communication formats, etc., to be used for the national and international exchange of environment related information;

- defining the needs in computer and communication equipment in relation to the project's objectives, envisaging a phased development, starting with the selected training institutions, followed by the most relevant governmental agencies (such as the Ministry in charge of environment, etc.), by the major local governmental authorities, etc.;

- including the financial requirements for the above in the documents to be submitted for potential donors' consideration; and

- phased upgrading of the informatics/communication infrastructure as funds become available.

19. UNEP - GEMS

The environmental assessment and reporting sub-programme, which includes GEMS, GRID, the State of the Environment Unit and the United Nations System-wide Earthwatch coordination facility, has been extensively reshaped as a result of recommendations from the General Assembly, UNCED's Agenda 21 and Governing Council of UNEP. In line with UNEP's new "management by results" policy, the sub-programme has been focused more specifically on the needs and capabilities of its users.

The key principles that underlie the newly-focused sub-programme are:

- to improve the capacities of countries to access and use existing data, rather than simply improving their own monitoring systems;

- to support the production of state of the environment reports, at national and regional levels, as a consolidated basis for decision making, in addition to continue to raise awareness and serve the scientific community;

- to provide access to integrated information on society, development and the environment that will catalyze the process of sustainable development, in addition to traditional sectoral information;

- to focus on emerging issues and early warning, in addition to mandated assessments of current environmental situations; and

- to integrate the provision of UNEP information into one system rather than providing users with disparate sets of information from different programmes and sub-programmes.

The revised sub-programme mission is thus: "To keep under review and enhance knowledge about the state of the environment and its linkages with development and socio-economic issues, particularly to identify emerging issues and priorities for international, regional and national sustainable development action".

The sub-programme will achieve its mission through work in three closely interwoven substantive programme components; assessment and reporting; data management, harmonization and dissemination; and regional institutional capacity building and servicing for environmental information networks. A fourth internal component provides management and coordination for the whole.

Assessment and reporting

Largely based on GEMS and the state of the Environment Unit, at global, regional and sectoral levels, the assessment and reporting sub-component will produce overviews of status, trends, interactions and impacts of international environmental and developmental processes to support informed policy making at the international level. Main activities include:

- setting up networks and developing conceptual frameworks for integrated assessment and reporting on implementation of sustainable development and Agenda 21;

- developing assessment methodologies, models and software tools on environment/development interactions, and contributing to efforts to set agreed targets for sustainability;

- producing global, regional and sectoral assessments, reports and early warnings, focusing on environment/development trends and interactions;

- improving the rationalisation, harmonisation and integration of UNEP assessment and reporting activities; and

- making an in-depth study of the needs of the UN system-wide Earthwatch system.

Data management, harmonization and dissemination

The management of environmental and related socio-economic data, based largely on the GRID system and services, will provide technical backstopping for capacity-building activities, provide information-handling support, and forward integrated data to the regional, global and sectoral partners, NGOs, and national and international bodies. Main activities will include:

- operating and maintaining a meta-database to improve management of and access to data;

- assisting and supporting national governments, regional networks and other programmes in their efforts to improve access to environmental and developmental data;

- developing critical datasets for use in environment/ development assessments;

- harmonizing environmental measurements; and

- developing a cost-effective and user-friendly data transfer system between UNEP and its partners.

Institutional capacity building and servicing

This component will support capacity building in the generation, analysis and handling of data, particularly in developing countries and countries with economies in transition, incorporating parts of both GEMS and GRID, in order to develop coordinated

networks of existing national and sub-regional institutions which are able to integrate and manage data on the environment and development. Specific activities will include:

- forming integrated information networks to support informed decision-making at national and regional levels;
- improving capacity, particularly in developing countries and countries with economies in transition, for integrating sectoral information and using this information in planning for sustainable development;
- transferring information-related technologies; and
- building up an effective world-wide system for international sharing of experience and technology in relation to integrated data on the environment and development.

20. UNFCCC

The secretariat is involved in a number of information related activities, many of which directly relate to specific sections of Chapter 40 of Agenda 21. It needs to be emphasized that many of the activities are at an early stage of development, given the nature of the Convention process, and the interim nature of its secretariat. Nevertheless, the secretariat has developed the concept of a "UNFCCC Information System", containing the following major elements:

A. Information and Documentation Centre

A library, containing the archives of the UNFCCC process, including papers related to the development of the Convention; other related materials, as well as a library of books, documents and periodicals that are related to the issue of climate change. The physical library is supported by a bibliographic data base. The Information and Documentation Centre will be accessible to the public, and is currently under development jointly with the UNEP/WMO Information Unit on Climate Change. (40.24)

B. Databases

A set of linked databases have been developed and are being maintained, containing organizational and individual contacts; list of climate change related activities in countries and in international organizations; bibliographic information; etc. (40.8, 40.22, 40.24). An information base of the National Communications by Parties and related analytical information is now under development. (40.6-10, 40.22-23)

C. Climex

Climex is an "Information Exchange System on Country Activities on Climate Change" that has been put in place to help countries to find out where they are able to obtain support (financial, technical human, information) to undertake national activities in support of their obligations under the Convention. (40.8, 40.14, 40.22, 40.24, 40.25,40.29)

D. Training Programme

The Training Programme to Promote the Implementation of the Convention (jointly undertaken with UNITAR and UNDP) is in its pilot phase, working in a number of countries. The programme develops training and information materials to help countries set up national programmes to respond to the Convention. (40.24, 40.29)

E. Communications/Dissemination

The secretariat as well as the focal points in the countries need powerful communications tools in order to implement the intensive two-way information traffic with countries and governmental and non-governmental organizations. Distribution of information on diskettes, via e-mail and electronic bulletin boards is already being practiced. Plans are under way for regular publication of CD-ROMs and the availability of the informtion on an on-line host. (40.25, 40.30)

21. WETV

During the first year of the development period for WETV, the Secretariat has undertaken a number of initiatives to advance North-South collaboration. WETV's partnership building efforts are ongoing, with Baha'i World Centre, CIDA, CARIMAC,

Commonwealth of Learning, Global Television Consortium (GTC), Heritage Canada, IISD, IUCN, Television Trust for the Environment (TVE), UNICEF, UNEP, World Bank and World Health Organization (WHO) joining as funding partners. Over the past year, WETV has also sought to bring the national broadcasters of the developing countries into partnership and has stimulated interest in negotiating eventual contractual agreements.

The Secretariat has convened and participated in various international conferences. Of particular importance is WETV's role in convening a conference of Southern Country Interests in advance of the 1992 and 1993 Annual Conferences of the *International Institute of Communications*, providing some 40-50 representatives of Southern countries access to this important forum and injecting major Southern issues and concerns into the international agenda.

WETV has also been involved in several international conference, such as the *Women Empowering Communication* conference recently held in Bangkok, Thailand, where the primary purpose was to seek programming from the southern countries and to establish contacts with independent producers worldwide.

The WETV Secretariat is currently exploring, with those responsible for the organization of the 4th UN World Conference on Women, the possibility of launching that part of the WETV service featuring programming by, for, and about women worldwide from the Beijing Conference in September 1995. Between now and September 1995, WETV will actively seek productions by independent women producers, particularly from the South. WETV is already involved with an international production, initiated in February 1994, to produce 5 minute segments on issues relating to the themes of the Beijing Conference: Equality, Development and Peace.

22. WEDO

In 1991, WEDO initiated the Women's Action Agenda 21, a blueprint for incorporating women's concerns about the environment and sustainable development into local, national and international decision-making. As part of its advocacy efforts, it organized women's caucuses that functioned throughout the preparations for the 1992 Earth Summit and succeeded in infusing the official UN documents with hundreds of provisions and recommendations affecting women, particularly in the developing world.

WEDO has completed an analysis detailing the provisions in Agenda 21 that stem from the Women,s Action Agenda 21.

Advocacy efforts continue to focus on distribution of WEDO's Community Report Card, a tool for organizing local groups around environmental issues. The Report Card helps women evaluate the condition of their area's natural environment, political systems, social priorities and human development goals. In this way WEDO has helped community organizations form and implement a community report card campaign to take action locally and feed information into global forums. These "Women for a Healthy Planet" groups are being organized in Africa, Asia, Europe, Latin America, the Middle East, North America, and the Pacific. Information efforts also include wide distribution of the Women's Action Agenda 21, which was crafted by more than 1500 women from 83 countries at the November 8-12, 1991 meeting of WEDO's World Women's Congress for a healthy Planet. WEDO also publishes a newsletter, "News and Views" which is distributed cost-free to 15,000 individuals and organizations around the globe.

WEDO had focused its organizing efforts on the theme "environmental links to health." It has initiated an international campaign "Women Cancer and the Environment: Action for Prevention," which highlights the connection between environmental pollutants and cancer, particularly breast cancer and other women's cancers. WEDO launched this campaign in collaboration with Greenpeace and grassroots women's health and cancer groups in the US, Canada and Mexico. WEDO is also encouraging other groups to join the campaign by initiating public hearings in other countries. WEDO will also organize panels at the major UN conferences around this theme to generate public awareness and political will to confront the root causes of environmental degradation.

23. THE WORLD BANK

The World Bank is involved in numerous projects that directly relate with environment. Below are the highlights of the Bank's environmental activities since UNCED *.

* Taken from "Implementing the Rio Agenda: The Role of the World Bank", a statement by Andrew Steer (Deputy Director, Environment Department, World Bank), to the Second Committee on the Forty-Eight Session of the General Assembly, New York, Nov. 23, 1993.

A. Financial Resources for Environmental Management

In the twelve months following UNCED, the World Bank committed a record $2 billion for twenty-three new loans and credits to assist developing countries in environmental protection and improvement. This represented a near doubling over the previous year and a thirty-fold increase over lending five years ago. In addition to these specifically environmental investments, the Bank expanded its financing pro-environmental development activities in the past year. Commitments rose to $180 million for population activities and $2 billion for education. Lending specifically targeted toward the poor and most vulnerable rose to $5 billion.

B. National and Regional Environmental Planning

More than thirty countries have now prepared national environmental action plans with assistance from the Bank. This year the Bank also completed regional strategy documents for Asia, for the Sahel in Africa, and for the countries of Central and Eastern Europe; the third report was endorsed by European environment ministers, and follow-up actions were initiated. Regional programmes, supported by the Bank, continued to address problems in the Mediterranean, Black and Baltic seas, and the Danube river basin.

C. Environmental Assessment (EA)

A major review of Bank experience with EA to date was completed and discussed by the Board of Executive Directors in April 1993. It found that EAs were having a significant and growing impact on project design and implementation and identified areas needing improvement.

D. Resettlement Issues

The report of the Independent Commission of Narmada, (the Morse Report) identified serous weaknesses in project preparation and implementation, especially with regard to resettlement. In addition to preparing a remedial action plan for the specific project, the Bank embarked upon a major policy review of all its projects involving resettlement. This will be completed in early 1994.

E. Global Environmental Challenges

The past year has been a crucial one for the Global Environmental Facility, as it has moved toward the completion of the pilot phase and prepared for restructuring and replenishment. The Bank has also participated actively in the international discussions

on the implementation of the Biodiversity and Climate Change Conventions and in the preparation of the Desertification Convention.

F. Organizational Strengthening

A new Vice Presidency for Environmentally Sustainable Development was established in January 1993, bringing together the Environment; Agriculture and Natural Resources; and Transport, Water, and Urban Development Departments. In addition thematic teams were established to promote cross-departmental and interdisciplinary teamwork, and a new Social Policy and Resettlement Division was established in the Environment Department.

G. Enhanced Skills Base

Recruitment during the past year has raised the number of full-time environmental specialists at the World Bank to around 200. A further 27 environmental specialists and 12 social scientists will be added in the coming year. Environmental training of Bank staff was also sharply increased, with more than 500 staff receiving training in the past year.

H. Project Implementation

The report of the World Bank's Portfolio Management Task Force (the Wapenhans Report) led to a detailed plan of action to strengthen project implementation. This has important implications for the effective implementation of the Bank's portfolio of environmental projects, which now stands at $5 billion.

I. Policy Papers and Directives

Several major policy papers and directives have been completed. Of note: the water resources management paper provides guidance on integrated water management in contrast to the fractured approaches of the past; policy papers on energy efficiency and conservation and on electric power outline practical approaches to demand management and transfer of energy efficient technologies; and an operational directive on agricultural pest management gives guidance for environmentally sound pesticide policies and the move toward integrated pest management.

The quality of the action plans has been quite varied, and it is important that these plans be recognized as the first step in a continuing process that has built on already existing efforts (e.g., UNCED national reports, country conservation strategies). Experience to date suggests that the preparation of action plans is most successful when it involves those responsible for economic as well as environmental decision-making and when there exists a methodology for identifying priorities and policies that is understood and accepted by all participants. Strong emphasis has been put on the countries' developing and maintaining ownership of their action plans and on the participation of the people likely to be affected by them. As a result, the time taken to prepare them is difficult to predict and has been much longer than initially anticipated, especially in Africa.

Since the Earth Summit, the Bank continues to expand its involvement in the preparation of regional strategies. Comprehensive regional analyses were completed for Asia, the Sahel, and central and eastern Europe. This latter report was the focus of a meeting of environment ministers from eastern and western Europe in Switzerland in April 1993; the proposed strategy was fully endorsed and follow-up actions were initiated. Several regional seas and river basins programmes also made important progress this year, with active Bank support. Phase II or the Mediterranean Technical Assistance Programme was launched, as was the Black Sea programme, and the Bank continued its financial and technical support of the Baltic Sea and Danube river basin programmes.

Equally important, the Bank is implementing new initiatives to improve coordination and communication at the international level with national environmental planning. Now, with UNCED and Agenda 21, all countries and the international development community -- including the World Bank -- recognize the concept of national plans for sustainable development. In this context, the Bank has been actively working with the new Commission on Sustainable Development, UNDP and UNEP to define means for improved collaboration amongst donors and developing countries with the multiple environmental planning requirements, using the framework of the national sustainable development plans. The Bank sees this as an essential step because both donor and developing country absorptive capacities are being stretched to their limits and the costs of additional requirements are diverting already severely constrained resources from implementation of important existing programmes.

Assessing the Mitigating Adverse Impacts of Bank Financed Projects.

In additional to providing direct support to environmental projects, the Bank continues to strive to make all of its lending environmentally and socially benign. The period since UNCED has been crucial for the Bank in further strengthening its capacity

for environmental and social assessment. The Narmada experience was sobering for the Bank, and it is totally committed to turn its lessons into positive practice.

Environmental Assessment. Since 1989, all investment projects proposed for Bank financing have been "screened" for their potential environmental consequences. As a result of screening, more than half of all projects are then subjected to environmental analysis, and about one fifth of the projects (fifty to sixty projects per year) to full environmental assessment (EA). A comprehensive review of experience to date has recently been completed. It concludes that:

- The quality of EAs, while mixed, is improving;
- EAs provide significant feedback into project design, although there remains a need to ensure impact assessment at an earlier stage of project preparation;
- Bank EA requirements are having a positive impact on borrower EA capacity, although there is still demand for expanded technical assistance;
- The Bank's own capacity of EA supervision and advisory services needs to be strengthened through expanded training programmes targeted recruitment;
- Effective public consultation, although universally accepted as essential for successful EAs, remains disappointing; and that
- Sectoral and regional EAs have high potential benefits and should be more widely used.

Resettlement Issues. Projects involving involuntary resettlement are among the most difficult and controversial of all Bank activities. In fiscal 1992, review of a Bank-supported project in India by the Independent Commission on Narmada (the Morse Report) found that although the Bank's resettlement policy was good, implementation of the policy by the Bank and borrowers was not. In response, the Bank initiated a comprehensive review of all Bank-financed projects involving resettlement, analyzing more than 100 projects currently under implementation (of which over 60 percent are in Asia), and determining how further to strengthen capacity for improved work. This review is scheduled for discussion by the Bank's Board of Directors in April 1994. Steps already being taken include expanded training for borrowers and Bank staff, promotion of regional seminars on new approaches to resettlement policies, and promotion of participatory approaches to resettlement design and implementation. Lessons of

successful capacity building at the country level, such as in China, Mexico, Colombia, and Côte d'Ivoire, are also being carefully assessed.

Social Dimensions of Environmental Management. In recognition of the integral role that social considerations play in natural resource management a new division of Social Policy and Resettlement was established in early 1993. Its mandate is to provide operational support, policy guidance, and intellectual leadership on issues of social assessment, resettlement, indigenous peoples, cultural property, and local participation. During the coming year this group will be preparing social assessment guidelines for use by project officers.

Building on the Positive Synergies between Development and the Environment

The third element of the Bank's post-Rio agenda is to build upon the positive "win-win" links between development and the environment -- a central theme of Agenda 21 and the Commission on Sustainable Development. Two propositions are now widely agreed. First, reducing poverty and strengthening human development are essential for environmental sustainability. Second, policies to promote the efficient use of resources benefit both the environment and the economy. Since UNCED the Bank has actively sought the expand its activities in both areas.

Lending specifically targeted to the poor and most vulnerable, monitoring under the Programme of Targeted Interventions (PTI), rose to $5 billion for seventy-three projects over the past 12 months. Lending for population programmes also rose to $180 million and is expected to reach $200 million in fiscal 1994; sixty population projects, representing more than $1 billion in commitments, are now under implementation. The Bank also made thirty-two loans and credits, amounting to nearly $2 billion, for education in fiscal 1993; most of these projects included special components to improve the quality of female education and encourage higher enrollment. Other lending activities benefiting both the poor and the environment included twelve water supply and sanitation projects, amounting to $1 billion, and projects to strengthen land tenure for poor farmers and urban squatters in Latin America and Africa. Bank-supported research on sustainable agriculture in low-income areas also expanded, through the Consultative Group on International Agriculture Research (CGIAR).

The Bank has also continued to support countries' efforts to promote the efficient use of resources. Two major policy papers -- on energy efficiency and conservation and on electric power -- were completed this year. They explore practical approaches to demand management and the transfer of energy-efficient, pollution-reducing technologies and demonstrate the crucial importance of energy pricing in efficient resource use. Progress in removing energy subsidies in borrower countries (still amounting to more than $230 billion) has been disappointing, and the policy papers recommend a tighter

focus on this and other efficiency measures in country dialogue. In fiscal 1993, the Bank made twenty-four energy sector loans, each of which supports energy efficiency, and the Energy Sector Management Programme restructured its work programme to give greater emphasis to environmental and efficiency concerns.

Removing subsidies to other natural resources, such as water, wood, and pesticides, by encouraging full costs recovery, also continues to be an important component of Bank lending. Adjustment lending (twenty-five loans and credits in fiscal 1993) remains an effective tools for supporting countries' efforts to remove wasteful distortions. A growing number of adjustment loan include environmental components, and some -- such as the Honduras Energy Adjustment Loan -- now explicitly address environmental concerns.

Addressing Global Environment Challenges

Global environmental concerns are increasingly being incorporated in the Bank's work. The year since Rio has been seen analytical progress in the evaluation of global costs and benefits, innovative IDA lending for renewable energy in India, and active Bank participation in the international discussions on the implementation of the Biodiversity and Climate Change conventions and in the preparation for the Desertification Convention. Biodiversity strategies have been completed or are under way for the Asia-Pacific, Latin America and the Caribbean, and Africa regions. The most direct Bank involvement with addressing global environmental challenges is through its role as implementing agency for the Global Environment and the Montreal Protocol.

The past twelve months have been crucial for the GEF, both with regard to moving toward a successful conclusion of the pilot phase and in preparing for replenishment and restructuring of the facility. The GEF has already committed more than $730 million to 113 projects aimed at helping developing countries deal with the threat to the global environment from climate change, the loss of biodiversity, pollution of international waters and depletion of the ozone layer. As of September 1993, commitments of $445 million had been made for fifty-four investment projects under way or endorsed by the participants and managed by the World Bank. Eleven investment projects approved by the Bank since Rio have sought to promote renewable energy in India and energy conservation in Thailand; conserve biodiversity in Belarus, Bolivia, Congo, Ghana, Turkey, Ukraine and the Slovak Republic; and reduce pollution in international waters (and protect aquatic biodiversity) in Egypt and the Seychelles. The past year has also seen progress on participatory approaches to designing and implementing projects and initiating research on incremental costs.

Participating governments are currently working out details of the new GEF. It is hoped that a restructured and financially replenished GEF will emerge from a meeting of more than 70 governments in Cartegena, Colombia, in early December. This would be the first major step towards implementing agreements reached at UNCED. Donor countries have already agreed on a target of $2 billion for GEF II. This is two and a half times the current size of the GEF, and represents a considerable increase in resources available over the next three years. If the issues related to the governance of the GEF are resolved, it is hoped that donors will announce pledges in Cartegena.

The Bank is also an implementing agency of the Multilateral Fund of the Montreal Protocol, which provides funds to help developing countries phase out all ozone-depleting substances by the year 2010. The Bank's portfolio of Montreal Protocol investment operations totals nearly $70 million for seventeen investments operations.

Building Partnerships in the International Community

Implementing the Bank's environmental agenda requires building partnerships and effective communication with the international community. At the multinational level the Bank has been active in the follow-up to UNCED through the Inter-Agency Committee on Sustainable Development, through support to the Secretariat of the Commission on Sustainable Development, and through an expanded programme of operational partnerships with regional and multilateral agencies. This year has also seen a more proactive programme of consultations on environmental issues with bilateral donor agencies. One-fifth of the environmental projects financed by the Bank were co-financed with bilateral agencies, and some $7 million in bilateral trust funds finance analytical work and technical support through the various environment units at the Bank.

The Bank continues to build partnerships with NGOs. This year witnessed some rewarding results and some strong disagreements. NGOs participated actively in discussions on Bank policy and strategy papers (such as those on forestry, water, agriculture, energy, and biodiversity) and in the review of environmentally sensitive projects. Particularly valuable are discussions at the country level with operational NGOs that have technical expertise in the environment. NGOs are also playing an important role in facilitating effective participation in environmental project preparation and in EA preparation.

The Bank's Economic Development Institute expanded its environmental activities during the past year, having organized fifteen major training activities for Bank borrowers. Drawing from Bank and borrower experiences in environmental management, these courses covered methodological issues of valuation and environmental economics and specific policy and institutional issues associated with biodiversity, pollution, forestry, and environmental assessment.

Further, in recognition of the need to stay abreast of the rapidly evolving knowledge base, the First Annual International Conference on Environmentally Sustainable Development was held at the World Bank in September 1993. It is planned that this conference will be held each year in conjunction with the World Bank and IMF Annual Meetings, so as to encourage participation by financial and economic policy makers as well as environmental and sector specialists. Another important conference, the Conference on Global Hunger, will be hosted by the World Bank next week. We are particularly pleased that keynote speakers will include the Secretary-General of the UN, as well as President Masire of Botswana, former President Jimmy Carter, and a number of other distinguished leaders in the fight against hunger.

The World Bank is keen to play a constructive partnership role within the United National systems. The preparation and implementation of the Desertification Convention provides an opportunity for such a partnership. The Bank stands ready to assist countries as they seek to design and implement cost-effective policies to address the blight of land degradation. The Bank will continue to be active in the preparation process, and have presented to the recent Preparatory Conference a document that lays out the links between policies and desertification as we understand them. The Global Conference on Small Islands provides another opportunity for partnership. The World Bank is already heavily active in assisting such countries of course, and has recently prepared a paper documenting the nature of current and potential support.

At the first meeting of the CSD the Bank noted that there is scope for our deliberations together to help equip ourselves intellectually and practically for the task ahead. We have all learnt a great deal about what constitutes good policy making for environmentally sustainable development. But we don't know all the answers. We are on an intellectual journey and we must travel it effectively together. We suggested that the CSD could play an important role in marshalling and disseminating lessons form success (and failure). It could identify examples of innovative policy reforms that can then be monitored for their replicability. We would support the suggestion, made by Canada and some other countries, that a number of "living laboratories" be identified. These would be ongoing case studies volunteered by governments, NGOs or multilateral agencies, who are making serious good faith efforts to address real problems. They would be available for scrutiny for the lessons that might be learned, and could along with other case studies be discussed at Round Tables, involving all relevant parties including NGOs and the private sector. Among the innovative policy initiatives, one might focus, for example, upon:

- air pollution in Mexico City or Beijing;
- natural habitat protection in Costa Rica or Madagascar;
- fisheries policy in Chile or New Zealand;
- environmental indicators in Canada or Australia;

- energy policy in the EC or Japan;
- agroecological zoning in the Brazilian Amazon or in the Philippines;
- water policy in Morocco or France;
- the use of market based instruments in Thailand or Holland; and
- environmental adjustments to the national accounts in the Nordic countries.

The precise modality is of course less important than the principle. The Bank needs to establish a process of structured learning so that it can build upon emerging positive experiences and rethink negative ones.

24. WCC

The report from the WCC gathering at Rio, *An Ecumenical Response to UNCED*, was printed and distributed widely to churches throughout the world. The Canadian churches also produced a report, *The Earth Summit and the Churches*.

Climate change has been a priority issue for the churches since about 1988. After the adoption of the Climate Change Convention at Rio, the WCC created a task group to focus on the ethical issues raised by climate change particularly the justice questions related to the enhanced greenhouse effect being precipitated largely by the North but with the consequences being experienced disproportionately by the South. A series of regional consultations were held throughout the world linking churches with NGOs that were active in addressing climate change. These regional events led to an international gathering in October 1993 in the Netherlands where a major study document was prepared for use by churches around the world. The WCC study document, *Climate Change: Sign of Peril, Test of Faith*, was officially launched at INC9 in Geneva in February 1994. The WCC is now planning for its participation in the first session of the Conference of the Parties to be held in Berlin in March 1995.

Forestry is a second major UNCED-related issue that is a priority for the churches. As a result of discussions held during the ecumenical gathering in Rio, the churches in Canada and in Southeast Asia decided to co-operate given the commonality of their experiences in addressing threats to the forests in their respective countries. A consultation was held in the Philippines in May 1993 bringing together church, environmentalists and indigenous peoples from Canada, the Philippines, Malaysia, Vietnam, New Zealand, Hong Kong, Japan and Indonesia. The event was hosted by the

churches of the Philippines and financed by grants from the Canadian churches and CIDA. The *Report on the Consultation on Sustainable Forests* is available.

The WCC had an eight-member delegation participate in the first session of the UN Commission on Sustainable Development in New York in June 1993. Plans are underway for a similar presence at the second session in May 1994. The WCC is also one of the co-sponsors (along with IDRC) of a proposed multi-stakeholder roundtable on technology co-operation and sustainable development being planned in conjunction with the Canadian government and the UN secretariat related to the CSD.

The WCC has had a number of discussions with Roman Catholic counterparts in Rome and with the Earth Council in Costa Rica about the possibility of reviving the Earth Charter. As yet, no definite plans are formalized. The WCC will be publishing a book later this year on ecological theology and ethics in the post-UNCED context entitled, *Ecotheology - Voices from South and North* with contributions form writers from around the world.

25. WEC

International Environment and Development Service (IEDS): Using volunteers and other experts, contributed services and materials from industry, government, academia and non-governmental organizations, IEDS provides pro bono assistance worldwide to enhance industrial and urban environmental, health, and safety management policy and practices. To accomplish this, the IEDS conducts:

- institutional and factory assessments;
- technology cooperation and training workshops; and
- study tours and on-the-job internships for environmentalists and government and industry officials.

During its first decade, IEDS has sent over 200 urban and industrial health, safety and environmental management experts to work with their counterparts in some 37 countries during over 400 missions.

Baltic Pollution Prevention Centres: WEC is establishing Pollution Prevention Centres (PPC) in each Baltic country (i.e. Estonia, Latvia, and Lithuania) during early 1994. PPCs will provide technical information, training and assistance to local industries that promote industrial process change, resulting in reduced waste generation and discharge to the environment, as well as cost savings for the industries. Within three years, each PPC will develop into a self-sustaining technical assistance centre, which will be financially independent of WEC, while maintaining its level and quality services. Each PPC will be responsible to:

- build a PPC library, consisting of pollution prevention documents, WEC in-country projet reports and case studies, technical reference materials (hard-copy and CD-ROM), equipment catalogues, training videos, and may provide technical data base access;

- conduct Pollution Prevention Training for PPC personnel, extension experts, and student interns;

- gather industry management input by establishing an Advisory Steering Committee of industry leaders to define industry's technical assistance needs;

- conduct Waste Minimization Workshops for selected industries; and

- publish pollution prevention documents, case studies form WEC Waste Minimization Demonstration Projects and WEC Waste Minimization Impact Projects as well as industry specific technical fact sheets.

Mexico Information Clearinghouse: In 1992, WEC show-cased at UNCED and inaugurated full service at five locations in Mexico of an Environmental and Energy Efficient Technology Transfer Clearinghouse (Clearinghouse) designed by the U.S. Environmental Protection Agency. The project was funded by a number of agencies of the U.S. Government through the EPA. After a year of operation a WEC evaluation of the Clearinghouse yielded the following four tier system reconfiguration:

Tier 4: Subscription to an on-line search service used for only the most sophisticated, complex questions (left unanswered at lower tiers) and for users that require and are willing to pay for this level, quality and timeliness of information.

Tier 3: Subscriptions to CD-ROM versions of large on-line commercial and U.S. government services and other environment and energy efficiency bulletin boards, clearinghouses, etc, searched by WEC staff information specialists on a fee-for-service basis.

Tier 2: A "library" of hard copy information on U.S. in-country and international organizations, vendors, and technical information resources, that will be available for searches on site or as part of a call-in service. Such information may also be accessed in cooperation with local libraries, universities, trade centres, etc.

Tier 1: A stand-alone, computer floppy PC-based "pointer" system (to be developed) that provides information on how to contact other clearinghouses, databases and hotlines, U.S. and private sector experts; government, industry and non-governmental organizations; environmental consultants and manufacturers, etc. These disks will be made available by subscription to a wide user base.

WEC believes that this simple to use, user friendly, and cost-efficient Clearinghouse is an important tool to help rapidly industrializing countries make more informed decisions.

Near East: WEC is establishing three environmental/pollution prevention libraries in Jordan and Morocco at the: Jordan Society for the Control of Environmental Pollution (JSCEP): JSCEP, a well-respected environmental NGO addressing both "brown" and "green" issues, will house an environmental/ pollution prevention library in Jordan. The library will be accessible to all members of the NGO, which include people from government, industry, academia and the general public. WEC is supplying hardcopy references (textbooks, government references, etc.), CD-ROM databases, and computer hardware and software. As part of a continuing cooperative effort, WEC is planning to fund an outreach project JSCEP is currently designing.

University of Jordan Water and Environment Research and Study Centre: WEC is assisting the University of Jordan's Water and Environment Research and Study Centre in establishing a pollution prevention resource centre. WEC is providing U of J with computer hardware and software equipment, environmentally-related CD-ROM databases, technical textbooks and documents. The U of J centre will focus on pollution prevention training and will be accessible to researchers and consultants. WEC has been working in cooperation with Washington State University to develop this library, WSU has a twinning arrangement with the U of J.

Energy Demand Management Project, Rabat Morocco: WEC is assisting the USAID-funded Energy Demand Management Project to assist industry in improving its energy efficiency and general pollution prevention practices. WEC is assisting in establishing a pollution prevention library which will be accessible to representatives from industry and academia. WEC will provide technical textbooks, documents, software and environmentally related databases.

International Environment Forum Country Profile Programme: The Country Profiles provide information on environmental, health and safety laws and regulations in a concise, easy-to read format. They are summaries of general environmental, health and safety policies; descriptions of responsible agencies; reviews of existing and proposed legislation; and outline regulations, standards and procedures. WEC was asked to play a lead role in gathering and distributing information needed by many multinational manufacturing companies.

PART IV

POTENTIAL AREAS FOR COLLABORATIVE ACTION

There is an increasing responsibility on the international community to make the most effective use of the finite resources available for implementing Agenda 21. This will require a stronger commitment towards collaboration. This was the rationale behind the informal consultation in Ottawa, and its validity has been reflected in the positive response. It is hoped that this preliminary discussion will lead to a mechanism for ongoing exchanges, perhaps electronically. But beyond that, there is an ongoing momentum to cooperate more systematically as partners on selected projects, themes, or study groups.

One of the advantages of collaboration is reducing duplication of effort, not only in terms of information gathering, processing, and dissemination, but also in areas of focus.

In some respects there is too much "information" floating around post-Rio in the Sustainable Development field, particularly in the form of tracts, books, organisational reports, research reports, seminars and conferences. The busy practitioner does one of three things:

- creates a pile in the office saying 'one day I will look at that';
- has a budget (or time), for extracting from it or at least flicking through it (lucky person!); or
- junks it all (or perhaps recycles it) after a delay, to soothe his/her conscience.

So much of what is available is valuable, very valuable. But sadly few have time to match the resource to their day to day needs. The result is waste; not only in terms of re-invention and duplication, but also in terms of missed opportunity and networking.

Set against a glut in some places is a huge deficit in others. Many sectors of importance in the post-Rio world never even receive what is out there - thus lose out on

the multiple efforts made to follow-up on Rio. Solving the dual problem of both information deficit and glut is where collaborative effort could be targeted.

In this regard, it is deemed necessary to:

i) Facilitate closer contact and collaboration between the relevant actors in the information community, to avoid both duplication of effort and conflicting messages to clients and donor agencies;

ii) Establish strategic linkages and joint activities, so as to jointly forward the implementation of Agenda 21 in the field of environmental information, assessment and reporting;

iii) Develop proposals for collaborative activities and joint projects;

iv) Identifying and tracking of initiatives on an international scale;

v) Coordinate and strengthen the efforts in governmental, non governmental research institutes, and in grass roots organizations;

vi) Create partnerships and collaborate to provide voice and legitimacy to grassroots women's groups encouraging participatory methods of planning and decision making;

vii) Identify and tap sources of funding for information initiatives in the areas covered by AGENDA 21, including the acquisition of relevant data from commercial sources;

viii) Develop international cooperative projects to give added value to initiatives with global potential and to improve funding prospects for locally significant projects;

x) Promote collaboration at the international level (e.g. Centre for Our Common Future, Earth Council, and UN DPCSD) in the dissemination of information related to the implementation of Agenda 21;

xi) Make greater efforts to ascertain environmental information needs of developing countries at various levels;

xii) Determine the comparative advantage of the various actors in meeting these needs;

xiii) Develop electronic/communications technologies which will allow for sharing of information products internationally; and

xiv) Creating directories of key resources, including people, organizations, and products.

The following are some of the specific issues that are identified as key areas for further collaboration and networking:

1. Information Management and Sustainability

i) Assisting developing countries manage and exploit more effectively information generated within their own borders;

ii) Developing strategies for maximising the sustainability of information systems for developing countries;

iii) Identifying and systematizing information at the national level so that it can both be used effectively at the national level and be "traded" as a resource at the international level;

iv) Compiling information on national "sustainable development" policies and their known or assessed impacts, with particular reference to regulations and standards; and

v) Providing advice on fund-raising, particularly in organizational development, project structuring, presentation techniques, and selection and coordination of approaches to funding sources.

2. Promoting Access and Use of Information

i) Promoting, among decision makers, greater recognition of the vital role of information supply to national and regional AGENDA 21 action programmes, and to development in general;

ii) Systematizing access to information on environmentally sound technologies (including sources of these technologies). This will involve not only concerted action by the UN System but also by national Governments (e.g., patent offices) and by consortia of private sector companies or organizations. It is crucial to develop a systematic approach for working with information "once it gets there" to ensure greater use of existing information;

iii) Looking into the drawbacks of new technologies and opening discussions which go beyond the "high tech" appeal to look at the effects that new technologies can have on our ways of working - i.e, are the new technologies now available for producing, processing, transmitting and storing ever-increasing quantities of information making a significant difference to the "information poor" of the world? How can this process be facilitated? etc.;

iv) Investigating methods for broader participation in decision-making at local, national, regional, and global levels;

v) Provide guidance in the development of information exchange capability at the national level, including the establishment of national sustainability "tool-kits" or demonstration/case studies from which others could learn; and

vi) Facilitate the exchange of information at the national level regarding the development and use of sustainability indicators.

3. Training

i) Intensifying efforts to train a cadre of information professionals in developing countries in modern methods of information management, including the use of information technologies; and

ii) Working with or setting-up local training and education facilities.

4. Promoting Ownership of Information

Closely associated to the above issue, is work on the idea of identifying the processes and techniques that promote the "ownership" of information. This appears to be an important prerequisite to converting information to action.

5. Recognizing Indigenous Knowledge

More serious attention deserves to be directed towards the rich resource base of indigenous knowledge/technology which many poor people already "own".

6. Information Support System for Sustainable Development

With the various Environmental and Sustainable Development Conventions, the Commission on Sustainable Development, relevant NGOs, not only the number of actors has been increasing, but also the reports that countries have to prepare and which they and many others have to read, and analyze. A coordinated approach between the different parties to help countries prepare these reports, and countries, as well as international governmental and non-governmental organizations to make use of the information contained in them is desperately needed. Some initiatives have been made (e.g., AGIS during UNCED, etc.), but a fresh approach is needed.

7. Indicators for Sustainable Development

These are crucial to measure progress, success and failures. Apart from GNP, we still do not have a good set. The main tasks are to develop the indicators themselves, and then to disseminate these in the right forms to the right audiences.

8. Bridging the Information Gap

The title of the Chapter 40 programme area still represents well the problem. The gap is there everywhere, but especially between North and South, and is widening. The issues are technical, financial and social.

9. InformationWatch

This was a term that appeared during the early versions of Chapter 40, and was dropped during the negotiations. However, we cannot properly tackle these issues given present institutions. There has to be some entity, whose primary purpose is to improve access to, and the quality and quantity of information on sustainable development. Somebody has to be on our backs, constantly reminding us of the importance of these issues, and at the same time constantly helping us to do our work better. There are many actors who are interested in the issue, but at the end, when budgets are tight, these concerns are de-emphasized in favour of the "real" objectives of the entities. Of course, this dichotomy is a false one, as in most cases one important reason for the failure (or ineffective operation) of many entities is precisely the lack of a coherent information collection, processing and dissemination strategy.

ANNEX I

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ANNEX II

SELECTED PAPERS

DRAFT 01/16/94

Towards Environmentally Sustainable Development

Measuring Progress

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for:
IUCN- The World Conservation Union
19th Session of the General Assembly
Buenos Aires, Argentina; 18-26 January 1994

Workshop 2
DEFINING SUSTAINABILITY AND MEASURING EFFORTS TO ATTAIN IT

Upon this gifted age, in its dark hour
Rains from the sky a meteoric shower
Of facts--; they lie unquestioned, uncombined,
Wisdom enough to leech us of our ill
Is daily spun, but there exists no loom
To weave it into fabric.
Edna St. Vincent Millay**

*This paper describes a Bank effort in its formative stage, so that views of Workshop participants can be taken into account. At this stage, the views expressed are those of the author and not necessarily those of the World Bank.

**Quoted in *Indicators of Environmental Quality*, William A. Thomas (ed.), page 4.

Introduction

1. The Bank is considering an annual report on global progress towards environmentally sustainable development (ESD). Its empirical base will be the many strands of indicator work in progress at the Bank and elsewhere; from a slowly growing body of studies on natural resource accounting to exploratory work on monitoring land quality, biodiversity indicators, etc. The options for presenting such information range from uncontroversial tabulations for the separate strands to syntheses that can be controversial.

2. The World Resources Institute's *World Resources Report* is an admirable example of what can be done with an encyclopedic approach. With modest resources and relatively little controversy, the Bank could imitate the WRI *Report*; product differentiation would come in the way the Bank recasts information to make it more meaningful to non-experts. Examples of such refinements by the Bank are the air and water quality graphs in *Development and Environment* (WDR92, with Figure 1 as an updated example); the World Bank *Atlas* (which now has separate sections on the economy, the people, and the environment) and, bearing in mind its target of secondary school students, the *Environmental Data Book*.

3. With a modest increase in resources but more risk of controversy, the Bank's *ESD Report* could press the limits of current thinking by cobbling initiatives on indicators, methodologies, and concepts into a tentative, loosely analytical "sustainability matrix." As a minimum, this would yield broad-gauge, baseline estimates for major country groupings (e.g., separately for low, middle, and high income economies); and suggest which indicators are robust enough to be reported at the national level. This would help flag priorities for further data work, across topics and with due regard to decision-makers' interest in summary, performance-oriented, measures.

4. It should be emphasized that this effort to synthesize the available information in no way signals a lessening of Bank support for topic- and country-specific studies; nor of Bank interest in international efforts to devise guidelines for environmental and sustainable development indicators. Indeed, as discussed in Section I, this new task should improve feedback between international guidelines and work on databases tailored to meet country needs.

5. Section II suggests a tentative framework for the "sustainability matrix," cobbled together from existing initiatives. Table 1 gives a highly tentative example of the sustainability matrix that could be available by the Bank's Second Annual Conference on ESD, in September 1994. Further iterations will surely be required, and only a limited number of entries are discussed in much detail, below. Section III considers how the report card approach could help communication between those trying to complete various

parts of the whole, and those more concerned with broad goals and knowing whether actions are being taken to attain those goals. Section IV notes practical considerations, including the key question of what can realistically be expected from the first set of ESD indicators.

I. Recent Developments in Indicator Work

6. A separate paper by the author, *Accounting for the Environment*, catalogues topic- and country-specific studies expected to provide the empirical base for the Bank's first *ESD Report*. A draft of the paper was circulated widely in August 1993; a revised version will be distributed at the IUCN workshop (January 21-22, 1994). The main message from such a cataloguing process is that there has been a surge in basic monitoring work, in recent years. While there are some neglected areas and certainly many others could benefit from more detailed work, the main issue now seems to be information overload rather than a lack of basic data. On the bright side, decisions about the choice of what to do, where, may not be as haphazard as it sometimes seems; monitoring patterns are beginning to emerge although they do not always conform with the expectations inherent in initial work on international guidelines for indicators of the environment and sustainable development.

7. This has led to a subtle but profound change in documents emerging from international meetings of statistical experts concerned with monitoring the environment and sustainable development. Attention has shifted from classification of ever-expanding lists of items to be monitored, and associated efforts to organize these into accounting schemes; towards analytical clustering of items around "issues," which entail models (mental or formal) of natural processes and how humans impinge on them. While there are many interesting variations on the theme, the consensus now seems to favour "...work from the most general to the specific - from the whole to its components and back again."[2]

8. This change in emphasis can be explained in part by recognition of "... the need to understand development of environmental statistics largely as a task involving coordination of a variety of data sources that exist outside statistical agencies;"[3] and the complexities added by the need for more attention to spatial referencing, since "different scale levels may be considered ranging from global to drainage basins to cities."[4] However, more explicit attention is also being given to the need to help today's decision-

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[2]*Reporting on Sustainable and Equitable Development-Project Paper No. 1, Conceptual Approach*; R. A. (Tony) Hodge; IDRC; 10/93; p32.

[3]Specific Methodological Issues in Environmental Statistics; Note by the Secretariat of the European Conference of Statisticians; CES/794 1 October 1993; paragraph 11.

[4]*An Overview of Environmental Indicators: State of the Art and Perspectives*; van der Born, et al; study commissioned by UNEP from the Dutch RIVM in collaboration with the University of Cambridge; page 81 (December 1993 draft); hereinafter ENEP/RIVM/UC survey.

makers. As Eurostat put it, "The conflict between the various goals of society, such as a better environment, employment for all, and material well-being, must be solved in a rational and democratic way. This requires detailed information on the *costs and benefits of policy options.*"[5]

9. New ways of clustering statistics emerge once policy relevance becomes the touchstone. For example, the appropriate indicator may vary from the problem identification stage through to policy development (identifying solutions) and ultimately to monitoring implementation (problem control); the meaning of international comparisons (or aggregations) of any one indicator, becomes tricky between nations at markedly different points along this policy continuum.[6] And "we have to recognize that an environmental *problem* consists of a physical phenomena *plus* an evaluation of this phenomena by society."[7] Distinct indicators are therefore needed for monitoring sources of environmental pressure, the state of the environment, and human responses; or what is known as the pressure-state-response (PSR) approach.[8]

10. On a more practical level, countries will also differ in terms of the measurable proxy-indicators that are available today, regardless of consensus on first-choice indicators.[9] And, recalling the special problems of spatial acuity, there can be pronounced differences within as well as among nations in terms of how much refinement any specific indicator really needs. The result is more a cascade than catalogue of indicators.

11. However, "the formulation of a rational policy will not be possible if we remain on the level of several hundred *physical* indicators, such as SO_2 *emissions* or *household water waste volumes*;" to "evaluate the benefits of measures, the reduction of pressures must be given in a common unit"[10] or "a conceptual model is needed as a framework for designing environmental and sustainable development indicators."[11] Veterans like WRI are finding that "essential insight came from grouping potential environmental measures into categories reflecting the context (political, economic, and environmental)

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[5]Environmental Indicators and Accounting; Internal Working Paper F3, 21.10.93; Eurostat submission to UNEP/UNSTAT Consultative Expert Group Meeting on Environmental and Sustainable Development Indicators; Geneva, 6-8 December, 1993; page 2.

[6]Paraphrase of UNEP's room document on UNEP/RIVM/UC study, *op. cit.*; for UNEP/UNSTAT Experts' meeting, Dec. 6-8, 1993.

[7]Eurostat document, *op. cit.*; page 4.

[8]See, in particular, Eurostat and OECD documents cited in other footnotes. The UNEP/UNSTAT Consultative Expert Group Meeting (December 6-8, 1993) also supported the PSR approach.

[9]See *Indicators for Environmental Performance Reviews: Progress Report by the Group on the State of the Environment*; ENV/EPOC/GEP(93)5; OECD meeting in Tokyo, 1-2 November, 1993; page 5.

[10]Eurostat, *ibid.*

[11]UNEP document for UNEP/UNSTAT meeting, *ibid.*

in which they might be used and realizing that each group of measures could be combined to form a comprehensive environmental indicator.[12]

12. Finding "a common unit" is not simple but consensus seems to be emerging, among experts, on three alternative branches of composition. Most experts favour preparation of results according to each, where possible, without forcing official statistics to rely entirely on one particular school of thought. One branch may be called monetization, with market prices, willingness-to-pay and remediation costs as prime candidates for the weighting of specific items. The second is expert assessments, where scientists are asked to devise technical weighting schemes, like reducing phosphates and nitrates to eutrophication equivalents;[13] or default back to preference for monitoring a single item (e.g., phosphates), which is tantamount to a weighting scheme that gives a zero-value to all but one item. The third is compliance with official policy goals; with initial work tending to give equal weight to each issue (combining them based on "distance-to-goal") although alternative weighting schemes can be tested--much like the comparison of alternative monetization schemes.

13. Against this background, the recent meeting of the UNEP/UNSTAT Consultative Expert Group concluded:[14]

> The indicators should reflect the interface between social, economic, and environmental issues. More attention needed to be given to the symbiosis between statistics and models. Statistics alone are not enough for decision-making and must be supplemented by textual and geographically referenced information...
>
> The role of indicators as signals for action was stressed. The usefulness of models for indicator development, interpretation, for exploration of future implications and as a means for estimating missing data was noted.

14. A similar reaction emerged when an early draft of this paper was discussed by the Bank's external Advisory Group on Environmentally Sustainable Development, which met in October 1993. While not in favour of distilling all ESD concerns into a few "magic numbers," the Group considered aggregation to be desirable in principle, no matter how hard it may be in practice. It was therefore generally in favour of moving towards so-called composite indicators, while not losing sight of the power of one or two "gripping" indicators.

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[12] *Global Environmental Indicators*; WRI room document for UNEP/UNSTAT meeting; Geneva; Dec. 6-8, 1993.

[13] See, for example, *Environmental Policy Performance Indicators*, Albert Adriannse; Dutch ORVM; 1993; pp. 41-5.

[14] Report of the Meeting, transmitted electronically, December 10, 1993.

15. The Advisory Group suggested some conceptual limits to the aggregation process. First, composite indicators are plausible for components of a whole, like the summation of production activities across sectors; but not for causally-linked items like production and the pollution it may generate (for which a model might give the appropriate mathematical expression). Second, distinct measures might be required for studying sensitivity (e.g., how a natural process reacts to a particular pressure) and stability (e.g., when and why a system leaves equilibrium). It was agreed that Bank work on composite indicators would not only keep these points in mind but also develop and document a more complete explanation of the limits to such compilations.

II. Devising a Tentative "Sustainability Matrix"

16. For practical reasons, initial work on the empirical base for the *ESD Report* uses the OECD's pressure-state-response (PSR) approach to descriptive environmental indicators. As summarized in a recent *Synthesis Report* (see footnote 8) PSR offers conceptual guidance on how to describe relationships (Figure 2); the OECD has gone further and used it to organize indicators that are widely available at present, for 14 issues (Figure 3) and suggest and documented a systematic approach to statistical improvements for each (see Figure 4 for an example).

17. Bank experts on each issue are being asked to adapt these to their understandings of what is feasible for developing countries. In some areas covered by the OECD, e.g., urban environmental quality, the Bank may be able to provide a more articulate statement. Also, the Bank will have to consider additional items of special importance to developing economies, notably subsoil minerals. And while the OECD considers some aspects of the global commons (e.g., climate change), the Bank may also need to consider this category more generally (e.g., adding oceans). But first, given the inter-disciplinary nature of ESD, the applicability of the PSR framework to economic and social indicators deserves attention.

a. Incorporating Economic and Social Concerns

18. The Bank publishes volumes of economic and social indicators. Some volumes focus on particular topics, with *Social Indicators of Development* and *World Population Projections* being the most relevant to the ESD theme. Others, like the *Atlas*, *World Development Indicators*, and *World Tables*, are limited only by the broad interests of the Bank and give subsets of economic, social, and environmental indicators elaborated elsewhere. However, subsets tend to chosen by specialists using essentially the criteria applied for topical publications, of what is most important for the individual field of study. Something more is needed for the *ESD Report*.

19. Ideally, a harmonized scheme of economic, social, and environmental issues would guide selection of indicators. In practice, this is a long-term endeavour, with problems in each field compounded by those of inter-disciplinary efforts, as experts in each field grope towards a shared sense of standards for areas of common interest. Some, notably economists, exchange information through highly structured conventions; for them, something like the UN's System of Economic and Environmental Accounts (SEEA) represents a significant outreach to other fields. However, it may seem like "topical empirialism" to those in fields used to conveying empirical work with more contextual documentation and less reliance on formal conventions.

20. In this sense, the PSR framework may be seen as an outreach by those who favour contextual reporting to those who want tabulated data (backed by rigorous conventions). It is more a typology of indicators than a description (let alone model) of environmental processes. It is neutral about how any ecological process works, let alone the consequences of human interactions. It just says that the "state" we observe is subject to "pressures" and elicits societal "responses" designed to vitiate pressures and improve the state. At this level of abstraction, the same typology ought to apply equally to economic or sociological processes. Recasting all indicators to fit the PSR framework is thus a means of reaching those who approach ESD along the environmental path, who may be more comfortable with the PSR than the SEEA framework.

21. Recasting economic and social indicators to fit the PSR framework poses some deceptively simple questions. First, how many "issues" need to be added? The ecological domain, with the least articulate conventions, is reduced to about a dozen (by the OECD); the others should be more compact. For the sake of argument, assume about as many socio-economic as ecological indicators. Economics, with the most articulate conventions, should need the least space in the tentative ESD Sustainability Matrix. Assuming four issues (leaving eight for the social domain), three might be those dealt with in national accounts (production, expenditure, and income), with labour the fourth.

22. Even with these simplifying assumptions, which measure should represent the "state" of production, in a PSR framework? Presumably, a "green" national accounting aggregate should be the centrepiece of the ESD "sustainability matrix." However, it will be years before many developing countries can provide such measures according to the SEEA framework.

23. While continuing to support such medium-term efforts, the Bank is experimenting with short-cut methods that consider two adjustments to the aggregate it reports most frequently ($GNP per capita).[15] First, comparable estimates of depreciation of produced

[15]The process was described more fully in the draft paper, Accounting for the Environment, circulated in August 1993, as mentioned above. A technical report on first estimates for some 90 countries is in preparation and will be distributed by March 1994.

assets have been generated for most countries. Moving from principle to practice for the well-established concept of allowance for consumption of capital (or from GNP to NNP) seems a prerequisite for broadening the concept to encompass degradation and depletion of natural resources (say, from NNP to NNP'). Second, *in situ* natural resources should be given some (non-zero) value, whether as another allowance for capital consumption or to reflect more accurately their role as intermediate inputs. The results are tentatively called NNP' to distinguish them from the more rigorous SEEA efforts to estimate Environmentally Adjusted Product (EDP).

24. Much can be done to refine these short-cut methods and to develop similar ones for other issues, notably so-called defensive expenditures (e.g., for air and water clean-up). However, preliminary results suggest that country relativities for levels and trends would not be altered as significantly as one might have imagined, if NNP' were used in place of GNP, even when a rather high value is assigned to *in situ* natural resources. This does not lessen the case for showing NNP' in the *ESD Report* but it does suggest that the aggregate is so broad as to be fairly insensitive to specific ESD concerns like depletion of natural resources.

25. At the same time, the latest theoretical results are suggesting that an adjusted concept of saving may in fact be more relevant, for such purposes.[16] In effect, drawing down natural resources can be likened to borrowing from abroad, as a means of closing the "gap" between genuine domestic saving and investment (which might be interpreted more broadly, to include investment in the stock of knowledge, through education). The analogy to foreign borrowing, and the relevance for analyzing saving, may help environmentalists understand economists' preoccupation with what can be monetized, discount premia, etc. Priorities for further work on national accounts might need to be reconsidered, if it were agreed that saving rather than income is the key variable.

26. Leaving NNP' as the pivot-point of the economic section of the ESD sustainability matrix, for the moment, what should we consider the "pressures" on production and society's "responses?" One line of reasoning, pursued in Table 1, would see pressure coming from the demand for inputs and a key economic response being improved efficiency of the produced assets. This would mean that environmental pressure can be monitored by looking at the input-output ratio(s) and that the response would be evaluated by the productivity of produced assets.[17]

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[16]See, in particular, *A Practical Sustainability Criterion When There Is International Trade*, Proops & Atkinson, 1993 (unpublished manuscript); and report by Kirk Hamilton to UNDP, on modifying Human Development Index for environmental concerns (also unpublished). These studies elaborate practical methods of calculation for the "weak" sustainability criterion, which permits trade-offs within the broadly defined capital stock (which comprises produced assets, natural resources, and the stock of knowledge).

[17]While measures of the stock of produced assets are not generally available, the Bank has generated preliminary estimates for some 90 countries, as part of the study that generated estimates of depreciation, discussed above. These, too, might be available for the *ESD Report*.

27. Even such tentative answers to PSR-type questions are likely to suggest ways in which conventional economic and social indicators might be refined or recast to make more sense in an issues-oriented PSR framework. Something rather like the OECD's plan for environmental indicators (e.g., Figure 4) might prove equally useful for proposing improvements in these domains over the short-, medium-, and long-term. For example, if we could gauge the value of produced assets on hand (or what economists usually call the capital stock), would this be the preferred indicator for monitoring the "state" of production or some other economic issue?[18] Since there are schools of economists who assign high priority to estimating such "stocks," the incremental support from environmentalists could have an impact.

28. The PSR approach should also underscore the shared view that no one domain, let alone one indicator, can cover the ESD theme. Modifications may be made in each, but analysts will still relate indicators from different disciplines. The Dutch have given a glimpse of this, in their approach to monitoring both environmental pressure and economic activity (see Figure 5).

29. The items listed in Table 1, for the economic and social domains, are either well established time series or refinements (including composites within issues) where the Bank has reasonable expectations of providing preliminary results in time for the *ESD Report*. Only the example of NNP' has been detailed, above, since the choice of indicators is open for discussion. The immediate question is how useful analysts, in and outside the Bank, would find a recasting of socio-economic indicators to fit a framework initially designed for environmental issues.

b. Composing Indicators for Ecological Issues

30. The PSR framework implies limits to the way statistics can be combined, meaningfully, into indicators. These are being made explicit for Bank purposes, although they will remain more as guidelines than rules. By considering the relevance and strength of subordinate series, the guidelines winnow a plethora of potentially interesting statistics down to a set that can be handled; provide a statement of expectations about when composites can (and cannot) be compiled; and suggest the kind of documentation users can expect as and when exceptions to expectations seem appropriate (see Section IV, below).

[18] This is more than a hypothetical issue. The Bank has prepared very tentative time series on the value of produced assets for about 90 countries, using a perpetual inventory model; and for human capital based on educational attainment. While still too crude for use in country-level analyses, consideration is being given to reporting results at the regional level in the *ESD Report*, if similarly crude composites can be devised for natural resources.

31. Each issue requires separate composites to evaluate pressure, state, and response. This means that indicators cannot be combined across those columns without blurring the processes that explain how pressures alter states, how altered states elicit responses, and how responses alter pressures. It also suggest that detailed statistics underlying analytical indicators must relate not only to an issue but to a specific column in the PSR framework. Statistics whose **relevance** is low or ambiguous across the PSR framework would not be Bank priorities for collection and processing of data.

32. The "common unit" for an issue (see paragraph 12, above) need not be applicable beyond a specific column, for a specific issue. Within a single cell, however, it must provide a defensible basis for **weighting** or aggregating subordinate series, meaning that they are equivalent in terms of that unit, in the context of the issue and column selected. For example, phosphates and nitrates might be expressed as Eutrophication Pressure Equivalents based on a technical consideration like the ratio of these two found in living organisms; that would not necessarily be the common unit for monitoring the state of eutrophication. Expressing details in terms of issue/column equivalencies provides a second compilation filter: priorities for work on basic statistics should be higher for series given more weight; series with less than some minimum weight should be disregarded.

33. The proposed sustainability matrix rearranges the 14 issues from the OECD framework into four clusters.[19] This intermediate tier, between individual issues and the whole domain, implies a **hierarchy within columns** for summarizing indicators, as and when composite indicators appear for specific issues. Providing some hierarchy emphasizes that one should not attempt to combine indicators for fairly disparate issues until agreement is reached on how to do so for more similar ones.

34. The clusters shown in Table 1 are based on a somewhat arbitrary mix of conceptual and practical concerns. Conceptually, they focus on similarities in responses, rather than pressure or state aspects of the PSR framework. Practically, they reflect the way composites are most likely to arise with similar or distinct aggregation procedures.

35. The term, Global Commons, is used to cluster issues that are global in scope and not just globally recurrent. These involve natural resources that are unpriced, in the UN's SEEA, and depend on responses by international protocols and conventions, which means collective action by national governments. Protocols and conventions tend to provide statements of goals which can be developed into "common units" as discussed above, in paragraph 12.

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[19]It also treats urbanization issues as part of the social rather than ecological domain. This has been done mainly for practical reasons. Concerns like housing (quantity as well as quality) figure prominently in Bank monitoring of urbanization; monitoring of water and air quality is in practice mainly concerned with human health, a point that can be made by locating them near health indicators.

36. A few issues, management of biodiversity and water resources, are clustered as National Trusts. They are generally viewed as part of the national patrimony even though they are not priced in the UN's SEEA, and mitigating pressure probably requires individual governments to respond as if the resources were marketed. Their composite indicators are unlikely to emerge from either a "distance-to-goal" approach (since this could be quite different across nations) or the kind of market pricing techniques accepted for the UN's SEEA.

37. The determination of a market price is technically easy for the next group, Marketed Assets. What is less clear is whether the application of market prices is the best choice when conditions seem far from equilibrium and market imperfections abound. Alternative valuations, possibly even some based on technical or policy considerations, might provide a better indication of how relative prices would weight items if ideal economic conditions applied.

38. Finally, there are pollution load issues clustered under Carrying Capacity not because they measure nature's ability to carry the load, although that would be preferable (just not feasible at present). Rather, response indicators in this cluster tend to be about what national accountants call "defensive expenditures" although a more positive set of responses should emerge, once indicators of technological innovation can be devised.

39. A key question remains just beneath the surface, throughout: whether the second-best solution is to accept that some key natural resources are treated as having no value or to accept some nonmonetary weighting scheme. Implicit in recent developments in indicator work (Section I, above) is the view that monetization is a special case of valuation; and current prices represent a special case of monetization. Hence, while there are good reasons to continue exploring various monetization techniques, this needn't set the limit for efforts to value essentially all natural resources, with careful documentation of the rules-of-thumb used for this purpose. This is particularly true when the objective is policy- or goal-oriented indicators.

III. Relating Baseline Estimates to Goals

40. At whatever level of aggregation one prefers, indicators need to be related to goals before they become meaningful. People often differ on the value they place on attaining one rather than another goal, even among issues that can be expressed in monetary terms. In this sense, measuring progress towards ESD implies a nonmonetary weighting scheme. Statisticians may shy away from this class of valuation issue[20] but it must be addressed openly if one is to set realistic expectations for what can be achieved with more and more careful monitoring, data collection, etc. More basic data

[20]Some experts prefer the term, evaluate, to a broadening of the definition of valuation. Either way, the challenge arises in the next step, of relating descriptive indicators to goals.

work can only be a placebo when there are unacknowledged conflicts about substantive goals and policy priorities.

41. A goals-oriented approach requires indicators that are themselves ratios of descriptive ones to target values--where targets could be defined technically or by policies. Guidelines would be needed for promoting consensus about the "right" targets. At least for a first iteration, the Bank is exploring the possibilities of weaving work by Dutch environmentalists and Prof. Sen's thoughts on monitoring economic regress into performance indicators (subsection a, below). Attention is also being given to the ways in which a goals-oriented approach can streamline indicator work (subsection b).

a. Developing Performance Indicators

42. The OECD observes that an indicator must have "significance extending beyond that directly associated with a parameter value."[21] Dr. Adiaanse, a key architect of the Dutch approach, has elaborated (see footnote 12) the idea of indicators as fractions designed for evaluation; they compare a quantity (numerator) with a scientifically or arbitrarily chosen measure (denominator) which serves as a norm or reference value. For descriptive indicators, such as those envisaged by the OECD study, the denominator is usually unspecified or implicit; for performance indicators, it must be made explicit. For example, descriptive indicators of air quality are usually expressed in micrograms per cubic meter; relating these to WHO guidelines (implicitly, in Figure 1) yields performance indicators (which are more easily understood, across pollutants, because they express distance to goals).

43. If the ESD report is to monitor global progress, it must seek performance indicators while recognizing that first results may do little more than set priorities for further data work. In effect, goals for action and for better monitoring are convolutionary. OECD countries are experimenting with performance indicators using goals that are politically-set targets (e.g., Montreal Protocol) as well as expert judgements about sustainability levels.

44. The key, for Bank purposes, is selection of criteria by which success or failure--indeed, the importance of monitoring conditions--could be judged. As a start, the ESD report will use four criteria suggested by Prof. Armatya Sen in another performance context:[22]

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[21] *Op. cit.*; page 6.

[22] *Economic Regress: Concepts and Features*; Annual Bank Conference on Development Economics; May 1993; pages 2-3.

Focal variable: In terms of what variable should progress or regress be judged? Should we talk of real income or real product (such as GDP or GNP per head), or some other indicator of quality of life (such as longevity or good health)?

Time Stretch: Are we to identify setbacks with a declining long-run trend line, or with short-run phenomenon of a sharp decline? The issues raised by a slow [but] lasting downward trend can be quite different from that of a temporary but severe deterioration (as, for example, in a famine).

Relativity: Is regress to be understood as setback in absolute terms, or only as falling behind other communities or groups (relative to their progress)? This question can be asked in each space, that is, in the context of each variable (income, product, quality of life, etc.), and also each segment of time (short or long runs).

Units: Are countries the right units for assessing regress? Are we mainly concerned with the average situation within a country, or the predicament of particular groups (for example, the worst-off)?

45. Given a convolutionary view of goals for action and monitoring, these criteria help avoid the conundrums that have traditionally prevented aggregation of basic data up to the point where they can serve inter-disciplinary purposes like an ESD report. By clarifying conditions for use of data, they should promote consensus about use of single indicators in specific contexts; including the contentious underlying issue of how far one can go in composing indicators from distinct pieces of basic information. This should bridge the gap between advocates of highly composite indicators like the UNDP's Human Development Index and traditional statisticians. It may also foster rules-of-thumb for relating social, economic, and environmental variables which might spark new thinking about global ESD modelling.

46. At the same time, Bank experts will have to approach each issue on a case-by-case basis, in deciding whether to focus on a single performance indicator or devise some clustering method (with a Dutch approach, summarized in this paper, as a default option). Over time, more issues should appear in more aggregative form, in the sustainability matrix.

b. The Case for "Optimally Inaccurate" Indicators

47. Policy makers are often content to know that a specific issue is or is not relevant in their present situation, which implies a pass/fail or 1-0 reporting system. If it were always that simple, one could measure progress by looking at a pattern of "hot-spots" or 0's where one would hope for 1's, in something like Table 1. This would not keep people from interpreting a given pattern differently, based on the importance they attach to attaining one or another goal.

48. Measuring progress towards ESD requires more than a pass/fail scheme even with agreed goals, if empirical results are ambiguous. The ambiguity tends to be about results near the borderline between pass and fail, when the range of uncertainty about the empirical work is enough to argue for either side of the borderline, depending on whether one takes the high or low side of the plausible range. Narrowing the range of uncertainty would be ideal but there will always be some observations that do not clearly

signal pass or fail. Allowance for an intermediate zone between pass and fail is unavoidable in practice.

49. The intermediate zone may itself need to be subdivided, when the number of observations falling into it becomes large. The process of expanding categories could be open-ended but for practical reasons it will be limited to a threesome for the *ESD Report*. Taken together with the categories for clear-pass and clear-fail, the plan is to report performance indicators on a scale of 1 (clearly cool) to 5 (clearly hot).

50. For most policy-oriented purposes, there is little reason to know more than a categorical ranking for indicators in categories 1 and 5. In the former case, there is no actionable problem; in the latter, resources should be spent on mitigation rather than monitoring and evaluation. People may differ on the importance of more precise information in the intermediate zone(s); this usually reflects priors about the importance of attaining one or another goal. Hence, expressing performance indicators on a 1-5 scale is a way of matching policy makers' concerns about issues with compilers' uncertainties about the underlying empirical evidence.

51. It should be emphasized that the intention is to report performance indicators in this way, without effect on presentation of descriptive indicators. It may take presentation of two versions of Table 1, separately for descriptive and performance indicators, to make this point. However, the task in moving from descriptive to performance indicators is not inherently different from the compression of indicators into ranges for maps in the World Bank *Atlas*. Not coincidentally, *Atlas* maps use five colours. Equating category numbers to colours, one could in fact "colorize" descriptive indicators as a way to convey their categorization as performance indicators. Hence, the numbers shown in Table 1 might relate to descriptive indicators while the colour of each cell might denote its range as the related performance indicator. The colour pattern of the table as a whole would give a semi-digested assessment of progress towards ESD goals.

52. It is arguable that any indicator of interest to a policy maker must be reducible to something like a five-point scale, based on distance to a prescribed goal.[23] That would be equally true for the numerous indicators that might be relevant to making decisions on a specific sector or for a specific locality within a country. If indicators relevant to local, sectoral decision-makers were reduced to a five-point scale, policy

[23]While beyond the scope of this paper, distance-to-goal can be expressed in terms of time (years) required to reach a desired category; presuming continuation of past trends or policy-induced changes. The time-distance measurement pioneered by Pavle Sicherl (citations provided on request) overcomes one form of arbitrariness of most goals-oriented composites, which assign equal weight to each issue in an indefinite future when all goals are attained. Time-distance would allow goals to refer to definite but distinct years in the future; and record the expected number of years in the appropriate cell of Table 1, e.g., x years for pressure on issue A, y years on issue B. Averaging these years would be a quick if still rather arbitrary way to find a "common unit" to form higher level composites.

makers with wider purview would presumably be interested in knowing how many localities/sectors reported clear-fail marks, near-fail marks, etc.; even before going into specifics. They might also wish to have some aggregate measures that are not so driven by problem-identification, but these too would probably be more digestible if policy makers could also see them on a five-point scale before going into specifics.

53. That is the essence of what are here called "optimally inaccurate" indicators. This involves more than a notion that policy makers make due with less accuracy since they only care about hotspots. The implication of that, alone, would be that the purpose at hand justifies a lower standard for data quality than technicians require. No such double-standard is intended here. While that will sometimes be true, technicians are equally likely to "over-engineer" information systems--and possibly ignore important points. For example, traditional statistical conventions methods, however unintentionally, tend to loose sight of hotspots within a generally sound whole, in ways that optimally inaccurate indicators would not.

IV. Practical Considerations

54. There is a risk in producing composite indicators for an *ESD Report* on the tight timetable envisaged here. Subsequent work might show decision-makers that their attention was directed at the wrong indicator(s); which some feel could discredit empirical work in general. The alternative, however, is tantamount to discrediting empirical processes now, implying that the best scientific minds can find no way of even pointing the likely direction of change, better than a busy politician concerned primarily with other matters.

55. The case for proceeding, now, is that a summary, analytical approach would improve the visibility of ESD concerns, much as the UNDP's Human Development Index drew high level attention to the issue of human capital. While the Bank is not in favour of distilling all ESD concerns into a few "magic numbers" for each nation, it is mindful of the gain from greater visibility that comes with more synthetic indicators. The trick is to be sure the effort yields more than an aggregation of "pity, sorrow, and rage" by continuing to assign priority to work on details while adding something on top of all that. The "sustainability matrix" is designed to be consistent with this approach, although the most that can be done in the short run may prove to be a renewed striving towards an index of human welfare, development, or both.

56. Nor will the Bank lose sight of the power of one or two "gripping" indicators. The more highly synthetic the indicator, the less it is likely to capture the imagination of the general public and key decision-makers.

a. Empty Cells in the Sustainability Matrix

57. The sheer magnitude of computational work involved suggests that it may not be possible to deliver composites for all the items noted in the cells of Table 1, in time for the first *ESD Report*. In addition, initial indicators have not been suggested for about a fifth of the cells. The completeness of Table 1 depends heavily on the extent to which topical experts, outside as well as within the Bank, contribute to the process. While the form of presentation is novel for all, it is hoped that topical experts will see this as a way to alert key policy makers of their efforts and priorities. It is expected that the *ESD Report* will include brief sections elaborating on the summary measures given in the sustainability matrix, where topical experts would disaggregate, qualify, and analyze the issue; and describe efforts to provide more robust indicators in future.

58. Failure to fill a cell with at least some optimally inaccurate indicator implies that topical experts are not clear about goals, monitoring and evaluation processes, or both. There is then a presumption that the brief issues sections would focus on plans to improve the empirical base; for without empirical evidence, resources are unlikely to be obtained. In many areas, progress beyond single indicators may depend on modelling, whether a simple mental model like a child's high temperature as a warning signal; more formal mathematical models; or intermediate positions like multi-criteria analyses. This is because traditional statistical techniques, confronted with novel problems of data quality (see subsection c, below), "...require many strengthening assumptions about the data for their applications to be legitimate."[24] The *ESD Report* could describe strengthening processes under way, particularly where the cells of Table 1 are empty.

b. Spatial Acuity

59. Most of the available data are national in coverage; and nations are a particularly poor way to represent ecosystems. Significant improvements in the empirical base for ESD indicators will not occur without a more disaggregated, or sub-national, approach to data collection. This is possible in some nations and the *ESD Report* may choose one or two as case studies to show how the accuracy and relevance of indicators improves when linkages among social, economic, and environmental factors are represented by a finer grain of information. Attention could then be given to potential contributions from innovative information sources, notably geographic information systems (GIS) and Bank projects.

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[24]See "Assessing and Communicating Data Quality in Policy-Relevant Research" by Costanza, Funtowicz, and Ravetz; *Environmental Management*, Vol. 16, No. 1. This section, particularly subsection c, draws heavily on this article.

60. More attention is needed to the spatial predicament of ESD indicators: they are inherently location-specific, they tend to become available mainly at the less precise national scale, and yet the first efforts to disseminate them may, as in the *ESD Report*, be on an even less precise, regional scale. A case can be made for work to build up from, say, village-level data; it is at this level that one could detect what needs to be measured and what data collection and processing is responsive. Some would emphasize the need for an eco-system approach, or at least progress towards a better feel for inter-relationships within and between ecosystems.

61. Spatial aggregation can be as difficult as combining statistics that deal with attributes of an issue, or summing observations over time. There is some ill-defined scale below which a finer grain of spatial information is unlikely to improve analysis, but above which there is a high risk of "mixing pears and apples." An important case in point, for Table 1, is the potential value of information on land use changes in monitoring pressure on biodiversity. The underlying functional relationship concerns habitat; nation-level indicators for countries with substantial land-mass are likely to average conditions over many distinct habitats.

62. This reinforces the case for optimally inaccurate indicators (see Section III b, above). It also suggests why national indicators can be misleading, unless they are developed with due regard to possible heterogeneity in what is being added, averaged, etc. This, in turn, explains much of the reason for compiling the ESD report only for supra-national units, for the present.

c. Other Aspects of Data Quality

63. Even for OECD nations, and within the range of indicators actively explored in their framework for environmental indicators, the empirical base is admittedly weak. Work in the near-term is perhaps best seen as essential to agreement on what indicators are appropriate, and how they can be compiled. This is all the more so for Bank efforts to extend the framework to countries with weaker statistical systems. While stressing the need to strengthen such systems, and indicating Bank efforts in this regard, the ESD report will have to recognize another aspect of "data quality."

64. Given the multiplicity of issues, each with many attributes to monitor, potentially in a massive number of locations; it is not realistic to expect data collection procedures to be comprehensive, as this term has been used in traditional statistical systems.[25] Relative to the complexities under study, empirical evidence will be sparse and coarse. Nor can one expect the evidence to be collected according to established statistical

[25]This is becoming true even for economics. For example, Joseph Duncan, Chief Economist for Dun & Bradstreet has argued (references on request) that the relevance of comprehensiveness is fading for merchandise trade; that trade promotion, etc., require the kind of information that can only be obtained by detailed questionnaires, of the type that can only be obtained by survey.

norms, which were designed to deal with random variability and presuppose that data are numerous and of good quality.

65. To complicate matters, much of the key empirical evidence will be collected precisely where systems are assumed to be vulnerable, whether in a socio-economic context (e.g., monitoring the poor) or an ecological one (e.g., monitoring water quality where humans exert the most pressure on rivers). In terms of methods designed to deal with random variability, this means biased sampling. And the more intensively one monitors vulnerable elements, the more biased the sample becomes--and the less relevant the sample is for gauging the whole system.[26]

66. Moreover, statistical methods have not yet been devised to cope with the complexities involved in systems of living organisms that interact, sometimes cooperatively and sometimes competitively. What some call the emerging science at the edge of chaos,[27] complexity theory may provide a justification for what appears as biased sampling, by conventional standards. There are "phase transitions" at certain points in complex processes, which might be expressed as nonlinearities in models if they could be properly studied; it is mainly around these points that one needs more empirical evidence. Quite possibly, standard statistical methods would work if applied to observations properly restricted to the area around phase transitions.

67. This helps explain the importance of distinguishing between precision and accuracy of empirical evidence. The example used by Costanza, Funtowicz and Ravetz[28] is:

> A marksman shooting at a target will produce a pattern of shots. They may all cluster tightly, in which case we speak of high precision, but we are also concerned with how closely they come to the bulls eye, which we describe in terms of accuracy. If the sighting apparatus is defective, the marksman's shots may well have a high precision and low accuracy.

Precision can be measured by instruments, etc.; accuracy is known only indirectly, by judging outcomes relative to expectations. Also, accuracy cannot be gauged without some sense of where the bullseye is, which returns the discussion to the need for a goals-oriented approach.

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[26]This is another way of concluding that data collection will tend to be mainly in the intermediate zone(s) discussed in Section III b.

[27]See, for example, *Complexity: The Emerging Science at the Edge of Chaos*; Michael Waldrop; 1993.

[28]*Op. cit.*

68. These forms of uncertainty, cumulatively, often swamp random variability, in empirical evidence. They can also outweigh problems of faulty monitoring equipment, human error in using equipment, etc.; even when those problems are genuine; if only because conventional statistical methods can more easily cope with such problems. However, until some means is found of distinguishing random variability from other forms of uncertainty inherent in most empirical evidence, genuine problems of inadequate equipment and training will be indistinguishable from those where more expenditure along these lines will produce little analytical gain.

69. With this in mind, the Bank is considering a novel form of documentation, building on the "NUSAP" approach of Costanza, Funtowicz, and Ravetz (see footnote 23). The main purpose is to place indicators in a "pedigree framework" designed to clarify three key aspects of the underlying numbers: theoretical (quality of models), empirical (quality of data), and social (degree of acceptance of the process used). Apart from the usual form of textual documentation of sources and methods, this approach leads to numeric expressions of "data quality" that adjust with the level of aggregation.

70. A full exposition of the NUSAP approach is beyond the scope of this paper. However, it should be noted that its notational system includes an arithmetic for data quality. It promises to help all users of the approach make roughly comparable evaluations of the empirical evidence they present; it also allows various forms of uncertainty to be tracked through progress computational stages. Specifically for Table 1, it could translate uncertainties about subordinate series into a data quality "grade" at the cell level.

71. The decision to publish or drop a particular indicator for the *ESD Report* can then be made on the basis of its data quality grade, which provides a structured guess about the range of uncertainty surrounding the estimate. The NUSAP notation system also permits that uncertainty to be traced back to components, which should help target areas which should receive the most attention, to improve the reliability of the composite indicator. The target area might be modelling, data collection, or peer review (as a means of raising social acceptability of results); it would not necessarily mean more data collection.

d. Inventory of Goals

72. The near-term priority is to organize available information to provide baselines or at least identify analytically significant omissions in terms that can highlight gaps of greatest importance to agreeing on goals--and ways of monitoring progress towards such goals. However, it will soon be necessary to prepare an inventory of goals, paralleling the inventory of databases that one takes for granted as a prerequisite for an exercise of this kind.

73. The term, goals, will be used loosely in preparing the inventory. For example, the Bank's graduation line (the per capita income level above which countries are not expected to borrow from the Bank) implies a goal--that all countries should be above that level. A demographic goal is implied by the concept of an assumed year of reaching a net reproduction rate of 1 (see, for example, Table 27 of the Bank's 1993 *World Development Indicators*).

74. Some other international agencies offer explicit as well as implicit goals that may prove useful. For example, UNICEF advocates a target, for the year 2000, of a 50% reduction in the prevalence of underweight children.[29] As noted under Global Commons (paragraph 35), international protocols can also provide relevant goals. However, even an expansive approach to an inventory of goals is likely to reveal a number of areas within Table 1 for which there is little clarity about goals. On the face of it, little can be made on measuring progress until there is consensus at least about some rough goals, on a par with those mentioned above. And, the argument for further basic data collection is difficult to support where there isn't a reasonable expectation of measuring progress.

e. Other Directions for Further Work

75. The emphasis in this paper has been on baseline estimates and goals. Once these are established, it will of course be necessary to collect empirical evidence over time, to measure progress. In many cases, time series exist--at least in principle. Many important social statistics are collected so infrequently, and rely so heavily on models for gap-filling, that it is not always possible to tell how much empirical evidence is actually being conveyed by the time series. Documenting these through the NUSAP system should help and at least shed some light on the relative force of data quality problems across the ESD domains. At the other extreme, some variables (e.g., air quality reports, inflation measures) are available with such high temporal frequency (if low spatial acuity) that "outliers" can complicate efforts to express the evidence in terms of longer time segments (e.g., years).

76. Apart from giving some attention to these ubiquitous problems of temporal aggregation, interpolation, etc.; more thought needs to be given to the relationship between frequency of measurement and rapidity of change that can be expected. In effect, there is little point in high frequency monitoring of a phenomena that is likely to change gradually. These practical aspects of temporal scaling might also need to be related to Dr. Sen's concept (see paragraph 44) of "time stretch" as a selection criterion for more work on basic data.

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[29] *The Progress of Nations*, UNICEF, 1993, page 17. Other targets are proposed that are relevant to Table 1, notably a halving of maternal mortality rates; and completion of a basic education by at least 80% of children.

77. Particularly as the time-stretch lengthens, it is not enough to add composites to a continuing effort on accepted topics like pollution loads. More attention is needed to data work that explores the "mathematics" of natural functions, and human effects on them. For example, the illustrative sustainability matrix reduced the eutrophication issue to pollution loads; but such figures mean little without an understanding of how natural processes cope with such pressures. At least in the medium- or long-term, the sustainability matrix should go beyond the OECD framework and the few empirical studies currently available to support performance indicators in this area.

78. Institutional and legal mechanisms should also figure in the eventual sustainability matrix. Some ideas along this line were included in a proposal[30] to a recent UNEP/UNSTAT meeting on environmental and sustainable development indicators. Progress on such mechanisms certainly merits attention; the technical problem is to find meaningful indicators for what is often a qualitative judgement. For example, it is easy and cheap to treat the signing of a convention as an indicator but the meaning may depend on an evaluation of institutional capacity to implement the substance or even monitoring compliance.

79. Given the extensive amount of new information, the Bank is considering release of a more technical document as a companion to the ESD report. Tentatively entitled *Global Approach to Environmental Analyses* (*GAEA*), the technical document would be geared more towards nation-level information (text and indicators), dissemination of more experimental indicators (including efforts at the sub-national level), and basic statistical issues.

80. Ideally, an overall "grade" would appear on the sustainability matrix, each year. In practice, this is unlikely until far more insight has been gained in to how ecosystems prosper and perish, and how human interventions affect those processes. At the same time, gaining such insights will be difficult without a bold effort to squeeze more policy-relevance from the data that exist and are coming down the pipeline; which is the objective of the framework proposed here.

Misc text

The Bank's perspective suggests more than application of the same approach to additional nations. Taking a global perspective raises issues of limited relevance to individual OECD nations while offering a unique chance to orient indicators towards goals. And, given the Bank's development concerns, harmonization with conventional

[30]Discussion paper by Berdrich Moldan, Vice-Chairman of the Bureau of the Commission on Sustainable Development; for the December 1993 meeting of the UNEP/UNSTAT Consultative Expert Group on Environmental and Sustainable Development Indicators.

socio-economic indicators also requires careful thought. Hence, the Bank's variant adds issues of special importance to developing economies (for example, subsoil minerals) and completes the list of international issues (adding, for example, oceans). It also moves beyond a "shopping list" of environmental issues, first by adding key economic and social issues and then considering how issues might be clustered, thematically.

81. Matters are further complicated by broad differences in communications processes, notably the balance between conventions and observations in the separate disciplines.[31] For example, economists tend to channel short bursts of information through highly-articulated conventions, like the UN System of National Accounts; e.g., they have a shared understanding of what it means to say that GNP rose by $x\%$ last year, without knowing the details of UNSNA. Sociology tend to accept looser conventions balanced by longer and more complex strings of information to transfer empirical evidence; e.g., greater use of text to qualify any numbers and less standardization of basic data, let alone more aggregated indicators. Ecologists seem even less agreed on conventions and accept correspondingly greater complexity in the way empirical evidence is exchanged, including a notably greater reliance on visualization tools like maps.

[31]The author is preparing another paper, Knowledge Tools for Environmentally Sustainable Development, which elaborates this point.

Figure 1: . **Oxygen in water—mean levels and trends**

Sites (66) in countries grouped by income level

Note: Missing points have been calculated using avg. gr. rate, and stations with zero (0.0mg/l) readings have been dropped.

Figure 2
Pressure - State - Response Framework

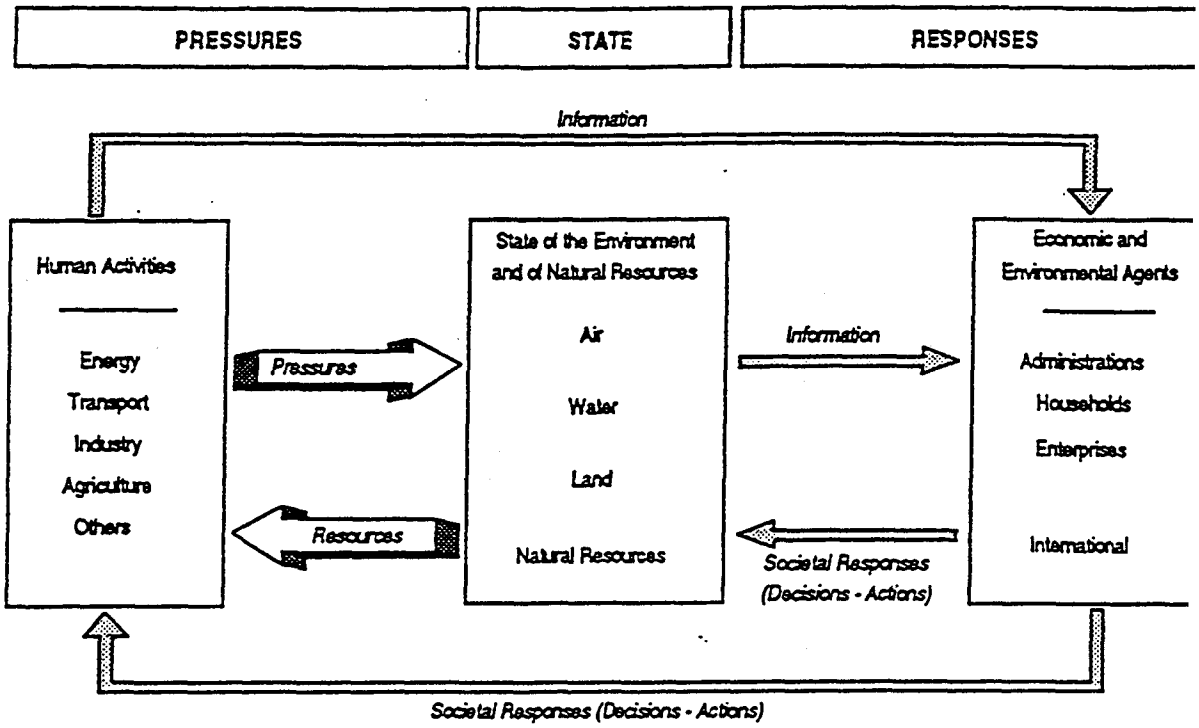


Figure 1b
Nature and Use of Environmental Indicators

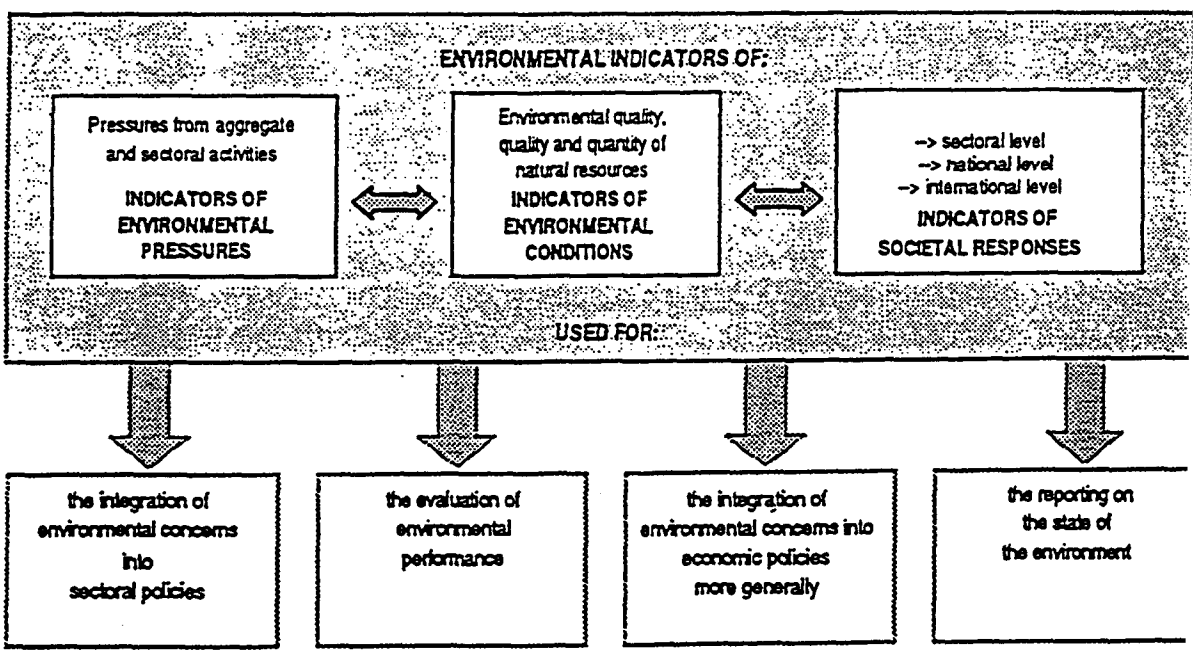


Figure 3 Summary of Short-Term Indicators[a] by Environmental Issue[b]

	Issues	PRESSURE Indicators of environmental pressures	STATE Indicators of environmental conditions	RESPONSE Indicators of societal responses
1.	Climate change	Emissions of CO_2	Atmospheric concentrations of greenhouse gases Global mean temperature	Energy intensity
2.	Stratospheric ozone depletion	Apparent consumption of CFCs	Atmospheric concentration of CFCs	
3.	Eutrophication	Apparent consumption of fertilizers, measured in N,P	BOD, DO, N and P in selected rivers	% of population connected to waste water treatment plants
4.	Acidification	Emissions of SOx and NOx	Concentrations in acid precipitations (pH, SO_4, NO_3)	Expenditure for air pollution abatement
5.	Toxic contamination	Generation of hazardous waste	Concentration of lead, cadmium, chromium, copper in selected rivers	Market share of unleaded petrol
6.	Urban environmental quality		Concentrations of SO_2, NO_2, particulates in selected cities	
7&8	Biological diversity and landscape	Land use changes	Threatened or extinct species as % of known species	Protected areas as % of total area
9.	Waste	Generation of municipal, industrial, nuclear, hazardous waste	not applicable	Expenditure on waste collection and treatment Waste recycling rates (paper and glass)
10.	Water resources	Intensity of use of water resources		
11.	Forest resources		Area, volume and distribution of forests	
12.	Fish resources	Fish catches		
13.	Soil degradation (desertification and erosion)	Land use changes		
14.	General indicators, not attributable to specific issues	Population growth and density GDP growth Industrial and agric. production Energy supply and structure Road traffic and vehicle stock	not applicable	Pollution abatement and control expenditure Public opinion on the environment

a) Only indicators which are available in the short term at international level are shown in this table. See Chapter 3 for other indicators. This tabl identifies key elements of indicators: at this point, no normalisation with respect to GDP, population, etc. is suggested. See Chapter 3 on use o indicators for a discussion.

b) For a brief discussion of each individual issue, see Chapter 3.

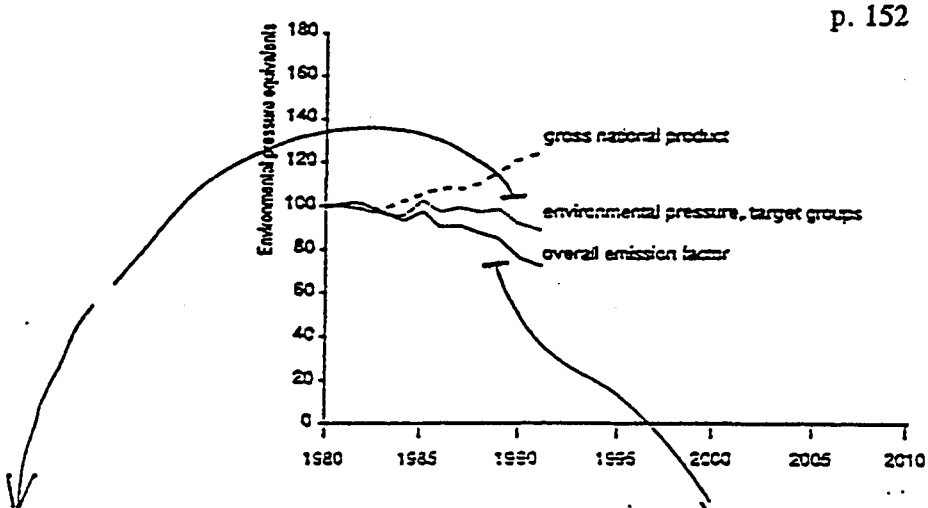
Figure 5
Relating environmental pressure to economic activity

The overall emission factor

The overall environmental pressure, as depicted in figure 609 can be combined with a measure of the overall economic activity in a similar way as introduced in chapter 5. This renders an overall emission factor. Since it is nearly impossible to combine throughput of crude oil, production values and the consumption value into one overall measure of economic activity, the Gross National Product (GNP) has been chosen instead.

Figure 613. Overall indicator for target groups

p. 152



09. Relative contribution of target groups to the total environmental pressure over the years, weighted by sustainability levels

p. 150

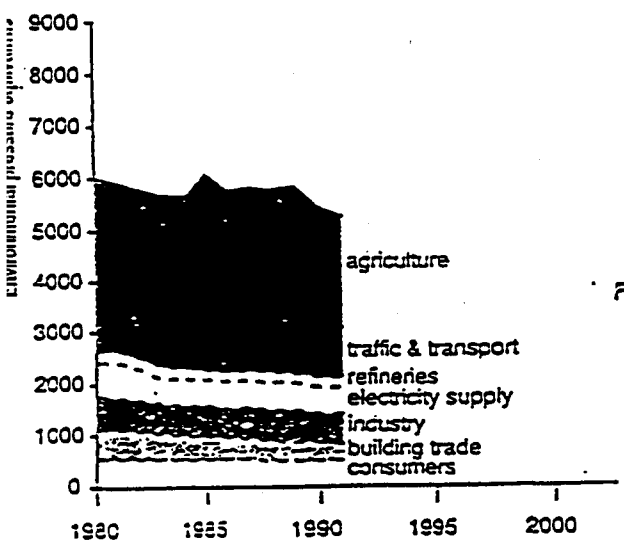
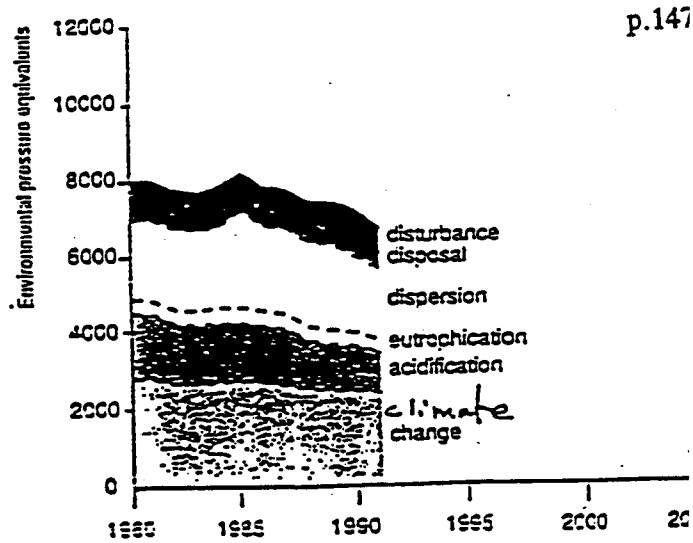


Figure 605. Relative contribution of themes to the total environm
over the years, weighted by sustainability levels

p.147



Source:
Environment Policy
Performance Indicators;
Albert Adriaanse; 1993

Figure 4
Sample of OECD approach to Indicator Development

Issues 7 and 8: Biological Diversity and Landscape

Summary of Indicators

Indicator	Measurability
Environmental pressures:	
● *Habitat alteration and conversion of land from its natural state*	L
○ Land use changes ○ Introduction of new genetic material and species	S L
Environmental conditions:	
● *Threatened or extinct species as a share of known species*	S
Societal responses:	
● *Protected areas as a percentage of total area by ecosystem type*	S L
○ Protected species as a percentage of threatened species	M/L

Environmental concern and policy relevance: biological diversity can be defined as the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. An ecosystem is a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

The broad and complex nature of biodiversity would, ideally, suggest a treatment at three different levels:
a) the ecosystem level, dealing with the combination of physical and biological elements; b) the population or species level dealing with the change in the number of species due to alteration of living conditions by man; c) genetic diversity within species.

One of the major outcomes of the United Nations Conference on Environment and Development in 1992 was the signing of the Convention on Biological Diversity by over 150 governments.

Landscape: Specific types of human land use, such as certain agricultural practices, road and house building, hydropower projects, drainage of wetland, forestry and mining may pose a threat to ecosystems, and thus a form of environmental pressure on landscape. In addition, landscape can be seen as a part of environmental quality as such, important to humans for ethical, aesthetic and cultural reasons. Thus, degradation of landscape entails both a loss of naturalness and historic cultural values. So far, no internationally agreed definition of landscape exists and no attempt has been made to develop landscape indicators in this report.

Indicators of environmental pressures: three types of pressures on biodiversity have been identified: physical ones (e.g. habitat alteration); chemical ones (e.g. exposure to contaminants); biological ones (e.g. release of alien species, fishing). The main chemical pressures are covered by issue 3,4 and 5. Some of the biological pressures are captured in issues 10 and 11, some of the physical pressures appear, for example, in issue 13. Here, indicators are focused on additional physical and biological pressures. Indicators of habitat alteration and the conversion of land from its natural state would reflect such pressures. Increasing use of land for agricultural purposes is suggested as a measurable proxy for environmental pressure.
Data availability: there are internationally comparable data on land use changes (Source: FAO, OECD).

Indicators of environmental conditions: the most frequently used indicator of the state of biodiversity is the number of threatened or extinct species over the number of known species.
Data availability: international data exist for threatened or extinct species as a percentage of known species (Source: OECD).

Indicators of societal responses: responses to protect biodiversity and landscape include measures to protect areas, ecosystems and species and to create biosphere reserves representative of different ecosystems. The suggested indicators of societal responses are therefore the size of protected areas by type of ecosystem and the number of protected species.
Data availability: information on the number and extent of protected areas is available (Source: IUCN) but comparability is not sufficient to provide coverage of different types of ecosystems. Data development work is also necessary to quantify the share of protected species.

Table 1. Initial Environmental Indicators for "Sustainability Matrix" on Environmentally Sustainable Development

Issue	#	A. Pressure	B. State	C. Response
I. Economic				
Poverty	1	Population (growth rate)	Distributional Inequality	Improved Access
Productivity	2	Intermediate Inputs (I) as % GNP	Value Added Per Capita (NNP')	Efficiency of Produced Assets (NNP'/Cap.I
Spending	3	.....	Gross National Expenditure(GNP)	Saving (Adjusted)/GNP
Jobs	4	Employment (% of Pop.)	Human Capital (Educational Attainment)	%NNP' spent on Education
II. Social				
Urbanization	5	.....	Population in urban areas (%total)	.....
Housing	6	Population Density (persons/km.sq.)	.....	%NNP' spent on Housing
Water Quality	7	.....	Dissolved Oxygen	.....
Air Quality	8	Energy Demand	Concentr. of particulates, SO2, etc.	.....
Health	9	Burden of Disease (DALYs/1000 persons)	Life Expectancy at Birth	%NNP' spent on Helth, vaccination
Nutrition	10	Prevalence of underweight children	Dietary energy supply	.....
Transport	11	.....	% of Total Produced Assets	.....
Women's status, Caring Capacity	12	Maternal mortality rate	Total fertility rate	Females/100 Males in Secondary School
III. Ecological				
Global Commons				
Climate Change	13	Emissions of CO2	Atmosph. Concentr. of Greenhouse Gases	Energy Efficiency of NNP'
Stratospheric Ozone	14	Apparent Consumption of CFCs	Atmosph. Concentr. of CFCs	% Coverage of Internat'l Protocols/Conven
Oceans /1	15	.....	.....	.....
Marine Resources	16	Contaminants, Demand for Fish as Food	Stock of Marine Species	.....
National Trust				
Biodiversity	17	Land Use Changes	Treatened, Extinct species % total	Protected Areas as % Threatened
Water	18	Intensity of Use	Accessibility to Pop. (weighted % total)	Water efficiency measures
Marketable Assets				
Gas, Oil & Coal	19	Extraction Rate(s)	Proven Reserves	Reverse Energy Subsidies
Metals and Minerals	20	Extraction Rate(s)	Proven Reserves	Input/Output ratio, main users; recycling ra
Forest Resources	21	Land Use Changes, Inputs for EDP	Area, volumes, distribution; value of forests	Input/Output ratio, main users; recycling ra
Land (Soil Quality)	22	Human-Induced Soil Degradation	Climatic Classes & Soil constraints	.....
Carrying Capacity/2				
Eutrophication	23	Use of Phosphates (P), Nitrates (N)	Biological Oxygen Demand, P, N in rivers	% Pop. w/waste treatment
Acidification	24	Emissions of SOx, NOx	Concentr. of pH, SOx, NOx in precipitation	Expenditure on Pollution Abatement
Toxic Contaminants	25	Generation of hazardous waste	Concentr. of lead, cadmium, etc., in rivers	% petrol unleaded
Waste	26	Generation of industrial, municipal waste	Accumulation to date	Exp. on collection & treatment; recycling i
General Indicators/3	27	.....	Opinion Polls on Environment, etc.	Exp. on Pollution control, abatement

This template begins with OECD framework for environmental indicators, adding (i) key socio-economic indicators and (ii) clustering of environmental issues. Where models, etc., have fostered consensus about main issues (e.g., economics) more aggregated indicators suffice; where underlying dynamics are poorly understood (e.g., ecology), more indicators are needed.

Initially, separate Report Cards are envisaged only for the world as a whole and broad country groups (low, middle, high income); country report cards would require greater scale/precision of indicators (and documentation) than is currently feasible.

Indicator work in each category will need to be made explicit by Bank experts; ideally, each cell would show a performance indicator (ratio of a baseline estimate to a goal); in practice, qualitative "grades" may have to be devised.

/1 For monitoring options, consider The Changing States and Health of a Large Marine Ecosystem; Sheram & Solow (US NOAA); for International Council for the Exploration of the Sea (1992).

/2 Available measures focus on nature as a pollution "sink;" more work is needed on absorptive/processing role of nature.

/3 Legal and institutional aspects might be included here.

March 25, 1994

THE UNEP ENVIRONMENT ASSESSMENT AND REPORTING SUB-PROGRAMME

THE DECADE AHEAD

To respond to changing demands for information about the environment and development, UNEP has reviewed its monitoring, assessment and reporting functions. This paper is based on the results of that review, and presents proposals for a new UNEP sub-programme. The analysis is in two parts: Part 1 is a policy statement for the sub-programme; Part 2 is a strategy for implementing it in the 1994/95 biennium and beyond.

UNEP, as the custodian of the environment programme for the United Nations as a whole, works closely with the rest of the UN system. The sub-programme outlined here will need to be implemented in full partnership with appropriate UN agencies. This draft has been prepared by UNEP to respond to Agenda 21 and to UNEP's new result- and client-orientated approach, and to serve as a basis for joint programming discussions with potential UN partners.

EXECUTIVE SUMMARY

The environmental assessment and reporting sub-programme, which includes GEMS, GRID, the State of the Environment Unit and the UN system-wide Earthwatch [1] coordination function, has been extensively reshaped in response to the UN General Assembly, the recommendations of UNCED's Agenda 21 and the decisions of the Governing Council of UNEP. In line with UNEP's new 'management by results' programming approach, the sub-programme has been focused more specifically on the needs and capabilities of its users.

The key principles that underlie the new sub-programme are:

- to improve the capacities of countries to access and use existing data derived from many different sources and disciplines, rather than simply improving their own monitoring systems;
- to support the production of environment-development assessment reports, at national and regional levels, as a consolidated basis for decision making, in addition to the previous aim of raising awareness and serving the scientific community;
- to provide access to integrated information on society, development and the environment that will catalyze the process of sustainable development, in addition to the sectoral information that GEMS provided;
- to enhance focus on emerging issues and early warning, in addition to the assessments of current situations that GEMS provided; and
- to integrate the provision of UNEP information into one system rather than providing users with disparate sets of information from different programmes and sub-programmes.

The sub-programme's mission is:

'To enhance knowledge and keep under review the state of the environment and its linkages with development and socio-economic issues, particularly to identify emerging issues and priorities for international, regional and national sustainable development action.'

The sub-programme will achieve its mission through three programme components:

- capacity building in the generation, analysis and integration of data and information, particularly in developing countries (this component will incorporate parts of both GEMS and GRID);
- the management of environmental and related socio-economic data, based largely on GRID, which will provide technical backstopping for capacity-building activities, provide information-handling support, and forward integrated data to

the assessment and reporting component; and
- assessment and reporting, largely based on GEMS and the State of the Environment Unit, at global, regional and sectoral levels;

Institutional capacity building and servicing

This component will develop coordinated information networks of existing national and sub-regional institutions and help improve their ability to integrate and manage data on the environment and development. Specific activities will include:
- forming integrated information networks to support informed decision-making at national and regional levels;
- improving capacity, particularly in developing countries and countries with economies in transition, for integrating sectoral information and using this information in planning and sustainable development;
- the transfer of information-related technologies; and
- building up an effective world-wide system for international sharing of experience and technology in relation to integrated data on the environment and development.

Information management, data harmonization and dissemination

This sub-component will provide information management support to institutional capacity building and to sectoral, regional and global environmental assessment and reporting activities of UNEP, its national partners, NGOs, and national and international bodies. Specific activities will include:
- operating and maintaining a meta-database to improve management of and access to data;
- assisting and supporting national governments, regional networks and other programmes in their efforts to improve access to environmental and developmental data;
- developing critical datasets for use in environment/development assessments; and
- developing a cost-effective and user-friendly data transfer system between UNEP and its partners.

Assessment and reporting at global, regional and sectoral levels

This sub-component will produce overviews of status and trends, assessments of interactions and impacts of international environmental and developmental processes to support informed policy making at the international level. Specific activities include:
- setting up networks of assessment institutions and promoting the development of conceptual frameworks for integrated assessment and reporting on implementation of sustainable development and Agenda 21;

- developing assessment methodologies, models and software tools on environment/development interactions, and contributing to efforts to set agreed targets for sustainability;
- producing global, regional and sectoral assessments, reports and early warnings, focusing on the interactions between environment and development;
- improving the rationalisation, harmonisation and integration of environmental assessment and reporting activities; and
- making an in-depth study of the needs of the UN system-wide Earthwatch system.

Part 1: Policy

1. THE EXISTING SUB-PROGRAMMEs

The following units form the environmental information, monitoring, assessment and reporting sub-programme of UNEP:

- GEMS, the Global Environment Monitoring System, together with its associated London-based Monitoring and Assessment Research Centre (MARC) and the Munich-based Harmonisation of Environmental Measurement Office (HEM);
- GRID, the Global Resource Information Database;
- SOE, the State of the Environment Unit;
- Infoterra, the International Referral System for Sources of Environmental Information
- IRPTC, the International Register for Potentially Toxic Chemicals;
- the UN system-wide Earthwatch process, implemented by GEMS until 1992; and
- GEMS/Climate Unit, implemented by GEMS until 1992.

1.1. GEMS

GEMS coordinated a number of global monitoring networks in the field of environmental pollution (in conjunction with FAO, WHO, WMO and Unesco). It produced specific reports, for example, on urban air pollution, freshwater pollution and food contamination. In addition, the Climate Unit played an active role in raising awareness of problems in relation to ozone depletion and the enhanced greenhouse effect, making substantial contributions to the reports and assessments that have lead to international action. GEMS was active in the compilation and harmonization of environmental data, and produced through MARC its Environmental Data Reports every two years. It has also produced a number of sectoral assessments in the field of natural resources using data generated both from UN-coordinated monitoring systems and from other sources.

1.2. GRID

The Global Resource Information Database is a world-wide network of co-operating centres dedicated to making geo-referenced and environmental information more accessible to decision makers and environment analysts. There are currently nine major centres (in Brazil, Denmark, Kenya, Japan, Nepal, Norway, Poland, Thailand, the United States and Switzerland). Each is responsible for the acquisition, management and distribution of data on a regional or issue basis.

GRID provides:

- geo-referenced data and geographic information systems (GIS) support to users world-wide, including other UNEP sub-programmes and UN programmes;
- catalogues and meta databases of major sources of geo-based environmental information;
- support to national GIS centres through regional networks; and
- training in GIS and satellite-image processing for environmental experts from developing countries, in cooperation with UNITAR and other bodies.

1.3. SOE

UNEP State of the Environment reports included:

- annual SOE reports on topics selected by the Governing Council (in even years on a socio economic issue, in odd years on two or three selected global environmental problems);
- State of the World Environment reports every ten years; and
- short reports to each session of the UNEP Governing Council on emerging environmental issues and hazardous environmental events.

In addition, limited support was provided to selected developing countries for the preparation of national SOE reports.

1.4. INFOTERRA

Infoterra is an international mechanism for exchanging technological information and experience. It facilitates access to the scientific and technical data sources necessary for environmental development, management and implementation.

Infoterra has been processing some 20,000 queries a year through a network of national focal points, regional service centres and special sectoral sources. The network includes some 6,000 specialist institutes, mostly outside the UN system. Infoterra also has been providing tailor-made replies to specific requests.

1.5. IRPTC

IRPTC is a global clearing house for scientific, technical and regulatory information on potentially toxic chemicals and acts both as a data bank and a global network. It has linked government-mandated institutes, provides training and produces documents and assessments related to hazardous chemicals.

1.6. UN System-Wide Earthwatch Coordination

In 1972, the UN Conference on the Human Environment established a UN system-wide Earthwatch to co-ordinate monitoring and assessment activities within the UN. Earthwatch was conceived as a mechanism by which UN bodies, in collaboration with governments and scientists, would gather data as the basis for comprehensive assessments of environmental issues, to provide early warning of environmental threats, and to improve policies and responses to environmental issues. Since then, several UN coordinating mechanisms, such as the United Nations Systems Designated Officials on Environmental Matters (DOEM) and the System-Wide Medium-Term Environment Programme (SWMTEP), were created to co-ordinate UN environmental activities, including monitoring and assessment activities contributing to Earthwatch. These mechanisms have not always been very effective.

Over the past two decades, the UN General Assembly and the Governing Council of UNEP emphasised repeatedly that the UN system-wide Earthwatch should keep under review the state of the world environment, make authoritative assessments, and provide early warning of emerging environmental issues of international importance. Recent resolutions have particularly emphasised the need to increase interagency cooperation and to make the early warning function operational.

In UNEP's Programme Budget Document for 1992-93, the heading Earthwatch was used for UNEP's monitoring, assessment and reporting activities, instead of the Environmental Assessment designation previously given to these activities. This led to confusion between UNEP's information, assessment and reporting activities and those of the UN System as a whole. This paper currently deals only with UNEP's information, assessment and reporting activities, as a major contribution to the UN system-wide Earthwatch. The final draft will include a policy and strategy section on the UN system-wide Earthwatch. Figure 1 shows the relationship between the agencies, programmes and other bodies discussed in this paper.

2. THE NEED FOR CHANGE

There are a number of compelling reasons for reviewing UNEP's policy and role in the field of environmental assessment and reporting.

- increased concern for the environment;
- changes in technology;
- the requirements of UNCED;
- the needs of new institutions and international agreements;
- the requirements of the UN system and UNEP; and
- the new results- and client-orientated approach of UNEP.

2.1. Increased concern for the environment

Environment issues have now moved to the top of political agendas. In response, the number of bodies in developed countries that conduct monitoring, assessment, reporting and information handling has increased. The resulting plethora of data necessitates a redefinition of UNEP's role and a review of the comparative advantages it has to offer.

In most developing countries, by contrast, systematic monitoring and analysis is not carried out in all critical areas, largely as a result of lack of funds, skilled manpower and technology. UNEP does not have the funds needed to rectify the situation and international priorities are such that the funds required are not likely to be made available in the near future. UNEP must therefore continue its efforts to raise awareness of the importance of monitoring and assessment, and mobilize funds to support them. At the same time, UNEP must increase its effort to make the best use of existing data.

Increased concern for the environment also means that it is no longer sufficient simply to quantify natural resources and environmental pollution through status and trends reports. Planners and decision makers require information on causes and effects, on policy and management options, and on the predicted results of corrective action such as national and international legislation. These new requirements demand that the scope of UNEP's assessment and reporting activities be broadened.

2.2. Changes in technology

Technological developments have opened up many new possibilities in monitoring, assessment and information handling. UNEP is exploring many of these, including automatic monitoring techniques, geographic information systems, user-friendly access to information derived from satellite sensing, and PC-based software that will allow users to specify the form and tailor the nature of the environment reports and assessments they require.

These and other technologies are changing the way monitoring is conducted, the type of assessments that can be made and the nature of the reports that can be produced. For example, so-called "decision-support" software systems are being developed that will enable users to obtain reports tailored to their own requirements and based on very recent data. Such reports can be almost instantly updated and will supplement the immutable, printed, once-off report that characterized environment reporting in the past. Future environment reports will be characterized by their immediacy and their versatility. UNEP's sub-programme needs changing to take full advantage of these radical new possibilities.

2.3. The requirements of UNCED

Sustainable development can be achieved only by incorporating environmental considerations in socio-economic and development policy, and vice versa. Indeed, Agenda 21 calls for an integration of environment and development information in order to support informed decision making.

UNCED affirmed that the solutions to environmental problems are as much a matter of politics and economics as of the environment. Reporting on the interactions and critical linkages between environment and development thus becomes an imperative for UNEP.

2.4. The needs of new institutions and international agreements

Several environment conventions, agreements and treaties have recently been created, some as a result of UNEP action. The Global Environment Facility (GEF) has become an important mechanism for implementing Agenda 21 and a temporary funding mechanism for the Climate Change and Biological Diversity Conventions. The Committee on Sustainable Development (CSD) is responsible for overall coordination of action on sustainable development. These bodies, and those connected with the new conventions, need data, assessments and reports to carry out their work effectively. A number of new national and regional bodies have similar needs .

2.5. General Assembly and UNEP Governing Council requirements

Both the General Assembly (GA) and the Governing Council of UNEP have called repeatedly for a strengthened UN capability to review the world environment and provide early warning on emerging issues of regional or global importance. UNEP has a major responsibility to follow-up these decisions and resolutions, in cooperation with its UN partner agencies.

The 17th Session of the Governing Council of UNEP in May 1993 emphasised the need for reporting not only on global issues of primary concern to industrialised countries, but also on those of more immediate relevance to developing countries. It also reduced funding for the Earthwatch programme. The sub-programme is thus faced with conflicting demands from the General Assembly and UNCED, on the one hand, and from UNEP's Governing Council on the other hand. This conflict has yet to be resolved.

2.6. Results- and client-oriented UNEP programming

In response to Agenda 21 and the need to increase the efficiency of UN bodies, UNEP recently adopted a results- and client-oriented management approach to its programming[2]. The aim is to respond better to client needs. The integration of UNEP sub-programmes to improve delivery to clients is the key to the new approach. This requires a reorientation of UNEP activities in the field of environment assessment and reporting, and better integration of these activities with the work of other UNEP units and of relevant organisations outside UNEP.

3. PRINCIPLES FOR THE NEW SUB-PROGRAMME

The need to revise the UNEP assessment and reporting sub-programme is thus based on five important principles. These are that the sub-programme should

- help decision makers formulate, implement and evaluate their policies and strategies, in addition to simply raising awareness;
- provide integrated environmental information for sustainable development, in addition to sectoral information;
- provide products for specified users, in addition to scientific assessments;
- focus on emerging issues and early warning, in addition to the current situation; and
- provide support to an integrated UNEP information delivery system rather than a set of disparate systems.

3.1. Providing support for decision makers

UNEP has put considerable effort into raising awareness through the compilation and presentation of data. Towards the end of its second decade, however, there was a major shift in the perceived functions of UNEP's activities, from merely describing the state of the environment and raising awareness to providing support for decision makers.

UNEP thus needs to focus less on the state of the environment and more on the interactions between environment and society. Impacts of national and regional activities on the global environment, and vice versa,-need to be studied and reported upon in order to support informed decision making. Analysis of the effectiveness of economic, financial and policy instruments will play a critical role.

3.2. Providing integrated information for sustainable development

Reporting for sustainable development requires the integration and analysis of information from many different sectors relating not only to the environment but also to the socio-economic fabric of society, including poverty, population, development and consumption patterns, trade and natural resource use.

UNEP should provide a forum for integrating these sectoral concerns and for developing the concepts that will be needed to collect, integrate and assess multidisciplinary data on a regional and global basis. UNEP has a comparative advantage in its global perspective and its multidisciplinary approach to the environment. Adding developmental and socio-economic dimensions to environmental assessments will lead to reporting which is more relevant to sustainable development. Reporting on the implementation of sustainable development will require the development and acceptance of targets of sustainability against which to measure progress.

3.3. Providing products for specified users

Traditionally, most environmental monitoring and assessment programmes belonged to the realm of science. They were often not focused on achieving specific impacts, on catalyzing action, or on information needs defined by users. Reports were often not delivered to managers and decision makers in accessible or meaningful forms.

The reports of the new sub-programme will be specified in close consultation with their users. Before specific activities are begun, the following questions will need to be addressed:

- who are the recipients;
- why is the product needed, what will it be used for, and on what is it intended to impact;
- what will be its content, geographical scope, scale, media and format; and
- when is it to be delivered.

Targeted user groups include international bodies, regional organisations, national governments, funding agencies, convention secretariats, the scientific community, the media and the general public.

3.4. Focusing on emerging issues and early warning

UNEP is charged with identifying emerging issues which may have global or regional impacts. Traditionally UNEP carried out this early warning[3] function through routine assessment of monitoring data to detect trends against predetermined thresholds.

As UNEP supplements this technique with the use of models and indicators (see next section), early warning will be increasingly achieved through forecasting systems analysis and the repeated screening of environmental indicators.

Environmental intelligence gathering -- keeping informed on the latest scientific, socio-economic and political developments through networking with relevant partners all over the world -- will also help identify emerging issues and trends.

3.5. Providing an integrated UNEP information delivery system

Almost all UNEP sub-programmes provide information to users at local, national or regional levels. The services provided include information on natural resources, biodiversity, desertification, toxic chemicals and waste, cleaner production technologies, and possible economic instruments and pollution abatement strategies. GRID provides geo-referenced data, and Information and Public Affairs (IPA) provides a stream of more generalised information for awareness building. UNEP also manages data catalogue systems, such as Infoterra and the GRID Meta-Database. Information is in many ways UNEP's major commodity.

Integrating these information delivery systems will greatly increase the efficiency of UNEP's services, provide a coherent corporate image, and result in more effective support to countries trying to achieve sustainable development.

4. TOOLS FOR THE NEW SUB-PROGRAMME

Three important tools will underpin much of the sub-programme's future work:

- the use of models and expert systems (in addition to traditional analysis techniques);
- the use of indicators (rather than data streams); and
- the use of electronic communications (in addition to printed reports).

4.1. The use of models and expert systems

UNEP's reporting will in future emphasize interactions between the environment, society and economics. This requires the development of models of these systems, and their interactions, particularly models of the interactions between environment and development. Models provide a valuable tool for integrating sectoral information. They can also be used to test the possible effectiveness of different policies and development strategies .

Expert systems are means of using software to process environmental and other data according to sets of rules used by decision makers and other experts. They can, however, process the data far more quickly and effectively than their human counterparts -- just as a calculator can perform the rules of addition more quickly than its operator. Expert systems show great promise in producing the kinds of assessments and information needed by planners and managers.

There are currently no internationally-accepted models or expert systems to describe environment-development interactions or to assess and report on aspects of sustainable development. Various national and regional initiatives are, however, underway. UNEP can provide a global forum to test and promote these initiatives.

4.2. Indicators

Policy makers, managers and the general public cannot use streams of raw data. Analysis and interpretation are always required. For example, water pollution data can be useful in actions on sustainable development action only when combined with other information or when subjected to expert judgement.

Indicators are a tool that can be used to summarize environmental information in a meaningful form. They can be used to summarize many different forms of data, from sectoral datasets to the overall status of the environment. They can be expressed in terms that are easily understandable by the general public and the decision maker.

Indicators are one kind of output from models (see above). They promise to become powerful policy-directing tools. Considerable research and development is needed, however, before the use of indicators can become either operational or routine.

UNEP will promote the development and use of indicators in all its reporting activities, including the harmonisation of sectoral assessments, and in the support it provides to governments in information handling and reporting. Particular attention needs to be paid to the indicators required to report on implementation of Agenda 21.

4.3. The use of electronic communications

Although printed documentation will continue to be a major format for reporting on the results of UNEP's work to Member States and partners, the corporate working environment world-wide is relying less on the paper transfer of information and more on electronic communications. UNEP will accelerate its early and rather successful experiments with communications in order to make such tools commonplace in its daily work. This will help ensure on the one hand that staff are able to locate the documentation they need from anywhere in the organization, to combine and collate it as needed, and deliver it efficiently to both internal and external users. On the other hand, more effort will also be made to allow governments to look into UNEP's workings and archives, through e-mail and electronic bulletin boards, and at the same time to improve their capability to engage in closer dialogue with partners as well as enjoy more efficient access to information world-wide from sources far beyond UNEP.

Part 2: Implementation strategy

5. FUTURE DIRECTIONS

5.1. The mission

The sub-programme's new mission is:

To enhance knowledge and keep under review the state of the environment and its linkages with development and socio-economic issues, particularly to identify emerging issues and priorities for international, regional and national sustainable development action.

5.2. The sub-programme components

The new sub-programme will have three components:
- institutional capacity building and servicing;
- information management, data harmonization and dissemination; and
- assessment and reporting at global, regional and sectoral levels.

Each component will interact with the other two. For example, data management will provide support and technical backstopping for the capacity-building component; it will also feed data into the assessment and reporting component.

The new sub-programme will require a reorganisation of the current sub-programme components such as GEMS, GRID and SOE. Although the main areas of expertise will be maintained and incorporated into the revised sub-programme, the sub-programme components will have to be realigned and integrated.

5.3. Major activities

The major activities envisaged for the revised sub-programme are:

Institutional capacity building and servicing

- forming integrated information networks to support informed decision-making at national and regional levels;
- improving capacity, particularly in developing countries and countries with economies in transition, for integrating sectoral information, and using this information in planning and sustainable development;
- the transfer of information-related technologies; and

- building up an effective world-wide system for international sharing of experience and technology in relation to integrated data on the environment and development.

Information management, data harmonization and dissemination

- operating and maintaining a meta-database to improve management of and access to data;
- assisting and supporting national governments, regional networks and other programmes in their efforts to improve access to environmental and developmental data;
- developing critical datasets for use in environment/development assessments; and
- developing a cost-effective and user-friendly data transfer system between UNEP and its partners.

Assessment and reporting at global, regional and sectoral levels

- setting up networks of assessment institutions and promoting the development of conceptual frameworks for integrated assessment and reporting on implementation of sustainable development and Agenda 21;
- developing assessment methodologies, models and software tools on environment/development interactions, and contributing to efforts to set agreed targets for sustainability;

- producing global, regional and sectoral assessments, reports and early warnings, focusing on environment/development interactions;
- improving the rationalisation, harmonisation and integration of environmental assessment and reporting activities; and
- making an in-depth study of the needs of the UN system-wide Earthwatch system.

6. INSTITUTIONAL CAPACITY BUILDING AND SERVICING

The first programme component will be built up from parts of the existing GEMS and GRID sub-programmes. Its major objective will be to:

Build up coordinated networks of data and information sources and national and sub-regional institutions to enhance the integration and management of geographic, environmental, socio-economic and natural resources data for environmental assessment and reporting in support of sustainable development.

These networks will form the bridge between raw data collection and the data management and the assessment and reporting sub-programme components. Their sources will be data and information gathered by local, national and regional organisations, and by other UNEP and international programmes in the regions. The networks will provide a means of linking sectoral data and information into a coherent and user-oriented network.

Major clients will be national governments, sub-regional agencies, regional action plan secretariats, and the UN Regional Commissions.

6.1. Major results

In the short term (1994/95):

- regional programme documents for Africa, Asia Pacific, Latin America and the Caribbean, West Asia, Eastern Europe and Polar areas for implementation by UNEP in cooperation with relevant UN partners;
- capacity building project proposals for discussion, agreement and financing by participating agencies, institutions and donors; and
- agreements between national, sub-regional and regional centres and networks to exchange data so that regional and global assessments and reports can be prepared on topics of mutual interest, particularly those requested by the global community through the UN General Assembly and UN bodies such as UNEP, CSD, FAO, UNESCO, HABITAT and GATT.

In the long term:

- operational environmental assessment and reporting support systems;
- strengthened data and information management capacities in developing regions;
- operational national and regional information networks within existing regional and national frameworks;

6.2 Strategy

- Work through existing institutions and agencies mandated to undertake environmental assessment and/or management.
- Give priority to projects which are already in place or being developed as new initiatives in other UNEP sub-programmes.
- Target support to environmental or sustainable development action plans that are being implemented by a regional organization on behalf of groups of nations (such as regional seas, international river basins and specific environments).
- Ensure that the support provided feeds into the assessment and reporting component, focusing on the analysis of environmental and socio-economic data.
- Emphasize human resource capacity building, technology transfer and institutional strengthening.
- Work in partnership with participating institutions to ensure that their needs are met.
- Complement activities of other UN and donor agencies and so reduce duplication.
- Work closely with UNDP, the UN Regional Commissions, the specialised UN agencies, the World Bank, the Regional Development Banks and other donors.

7. INFORMATION MANAGEMENT, DATA HARMONIZATION AND DISSEMINATION

The major objective of this sub-programme component will be to:

Provide the best possible information management support to the environmental assessment and reporting and information network development activities of UNEP, its national partners and clients, and international and national bodies and NGOs.

This sub-programme component will be based largely on GRID. It will manage data derived from the regional information networks, the sectoral UNEP sub-programmes and relevant information sources from outside UNEP, particularly geo-referenced information and information derived from remote sensing.

It will also provide information and information management services to the other two sub-programme components, to other UNEP sub-programmes (both sectoral and cross-cutting, such as IPA, Law, Economics, etc.), to regional network users, and upon request to outside UNEP clients.

It will build upon the experience of GRID and the GRID co-operating centres world-wide as well as upon the national and regional UNEP-supported information centres currently operational in Africa and Asia, and the ongoing cooperation, through other UNEP sub-programmes, with outside UNEP data sources.

Major clients will be UNEP sectoral sub-programmes, national governments, regional and sectoral bodies, specialised agencies of the UN, NGOs, and national, regional and international research institutes.

7.1 Major results

Enhanced access to databases

- Expanded network (GRID) of distributed global, regional and national environmental and socio-economic databases and meta-data.
- In-house and external access, via telecommunications, to data from the GRID archives.
- Strengthened capacities to derive information from data
- Increased capacities of clients, UN partners and in-house units to access and use geo-referenced databases and remote sensing data for sustainable development reporting.
- Development and provision of database management tools.
- Data quality improved and data better harmonized.
- Decision-making, both within UNEP and among its partners and clients, improved by incorporation of cross-sectoral data into the decision process.

Network support

- In-house communication services including local and wide area networks.
- In-country capacity to acquire, utilize and distribute data through UNEP.
- Essential linkages promoted among data networks.
- Co-operative working agreements with partners established, and donor commitments finalised.

7.2 Strategy

- Develop the data archives and meta-data of GRID through partnerships and regional networks to serve the database requirements of conventions, UNEP sub-programmes and in-house sectoral interests.
- Focus on expanding network access to geo-referenced databases and remote sensing data in collaboration with appropriate partners to support environmental sensing and reporting.
- Strengthen the network of GRID centres to ensure the ready availability of data to UNEP and its partners through distributed databases.
- Provide an international forum for sectoral experts to establish guidelines on minimum data requirements, quality control and harmonisation of environmental data management.
- Collaborate with UN partners and donors to establish the most appropriate telecommunications system for data exchange between UNEP and its partners.

- Undertake capacity building in database development, GIS and remote sensing technology transfer in cooperation with UN partners.

8. ASSESSMENT AND REPORTING AT GLOBAL, REGIONAL AND SECTORAL LEVELS

The major objective of this sub-programme component is to:

Provide, within the framework of Agenda 21 and in cooperation with relevant partners, overviews of status and trends and assessments of impacts of environmental and developmental processes to support informed policy formulation at international, regional and sectoral levels.

The assessment and reporting component will draw on outputs from the other two components, integrating them into comprehensive assessment and reporting frameworks relevant to the environment/development interface. This component will be founded on the expertise and knowledge acquired through 15 years of operation of GEMS and the SOE unit, particularly on the resultant network of outside expertise, as well as on the sectoral expertise resident within UNEP.

Different approaches and emphases are required for the activities at global, regional and sectoral levels, though there are obviously many links between them.

At the global level, UNEP has the mandate to keep under review the state of the world's environment, identify emerging issues of international significance and provide early warning as required, establish baselines against which to measure change, identify priorities for international action and for international resources allocation, report as appropriate on action which has and has not been taken to alleviate environmental problems, raise awareness, and identify monitoring, assessment and information gaps and needs.

The regional emphasis, aimed at addressing specific clients needs, is new and will require close cooperation with UNEP's regional offices and other UNEP sub-programmes active in the regions. Efforts will be directed primarily towards strengthening regional capabilities in assessment and reporting in fields of stated priority to developing countries. Close cooperation with the other two programme sub-components will ensure that the necessary data are available for assessments.

Several UNEP sub-programmes, such as those on biodiversity and desertification, produce assessments and reports in sectoral fields. One of the aims of this sub-programme component is to harmonize these sectoral reports and ensure that they use common methodologies and data sources, contribute to global and regional reporting, integrate effectively with programmes outside UNEP, contribute to an integrated UNEP information database, and are accessible to a wide variety of users.

Clients will include national Governments, regional and international organisations and bodies, including the CSD, international funding organizations, including the GEF, major scientific research groups , clients targeted for UNEP's sectoral assessments and reports, and the global community.

8.1 Major results

In the short term (1994-1997), the sub-programme component will produce conceptual frameworks for environment/development reporting, assessment methodologies on environment/development interactions, and reports in selected areas. It will also establish the international collaboration required for global reporting and contribute to setting internationally accepted targets for sustainability.

It will produce the Executive Director's Statement on the Environment to regular sessions of UNEP's Governing Council in 1995 and 1997, and will make an in-depth study of the needs of the UN system-wide Earthwatch system.

The regional part of the sub-programme component will support Asia, Latin America and the Caribbean and Africa in:

- the development of region-specific assessment and reporting methodologies and software tools;
- the establishment of regional reporting frameworks and networks for (national/regional) assessment and reporting, particularly on the implementation of Agenda 21.
- the production of regional reports, such as regional SOE; and
- the input by developing countries to global reports.

The sectoral part of the sub-programme component will support the production of sectoral assessment reports by other UNEP sub-programmes and define ways of integrating and harmonizing the UNEP reporting strategy and delivery system. Cooperation with major international monitoring, assessment and research sub-programmes, and statistical data compilation activities will be formalised and strengthened.

In the long term, the sub-programme aims at establishing an integrated, harmonised and uniform UNEP assessment and reporting strategy and delivery system. It will also lead to the necessary assessment and reporting capabilities in all developing regions, and the harmonisation and integration of regional assessment and reporting activities. It will provide comprehensive global assessments of the environment, culminating in the 2002 Report on the State of the World Environment, covering most of the issues addressed in Agenda 21.

8.2 Strategy

An international consensus will be built up by:
- supporting the development of conceptual frameworks for integrated environment/development reporting;
  providing neutral, global fora for international policy-relevant reporting;
- ensuring the active participation of developing countries in global assessment and reporting; and
- coordinating and integrating relevant activities conducted by other UN bodies and international organisations.

Focus on integration of information derived from different environmental and socio-economic sectors, and on the interactions between environment and development.

The reports produced will be made relevant to management and policy formulation by:

- tailoring the geographical scale of the assessments and reports to the nature of the problem (for example, global for atmospheric issues, regional for acidification

and shared freshwater bodies, national for natural resources, and local for urban air pollution); the global picture will be aggregated from regional scenarios;
- using local, national and regional expertise wherever possible; and
- reporting on uncertainties of assessment and evaluation processes.

An iterative assessment process will be introduced in order to reduce uncertainties and produce gradually more comprehensive and complete reports. As required, a preliminary assessment will be made, initially based on existing data and information, expert judgement, modelling and deduction. One of the purposes of such "cyclic reporting" will be to identify future monitoring and information needs and gaps. These needs will then be addressed through capacity building, regional networks and information-gathering activities. The information emerging from this will then feed back into a second cycle of more refined assessments.

- major assessments will be published in several forms such as technical reports, popular brochures, fact sheets, notices on electronic bulletin boards, catalogue elements in meta-databases and videos;
- reports and assessments will be published commercially wherever possible;
- sectoral activities, currently coordinated by GEMS, will be gradually handed over to the substantive sectoral units once the integrated information system and strategy is operational; and
- priority will be given to projects of immediate importance, producing useful results based on available information.

Postscript

Over the past 20 years, UNEP has made a very significant contribution to Earthwatch. For example, UNEP has played a major role in alerting the world community to the perilous state of many of its rivers and lakes, to the levels of pollution that exist in the planet's major cities, to the impact of chemical pollution and its causes, to the pace of deforestation, to the effects of desertification in the world's arid zones, and to the loss of biodiversity that is occurring in many regions. UNEP has also played an important part in bringing to the attention of the world the threat of ozone depletion and the dangers of an enhanced greenhouse effect resulting in climate change.

This is exactly what Stockholm intended when it created Earthwatch in 1972. UNEP can be proud that it has contributed so much in relatively so short a time. The extent to which we have helped put environmental issues at the top of the political agenda was apparent at Rio two years ago. In this sense part of our job, as defined at Stockholm as the raising of environmental awareness, is now done; we have indeed raised awareness of the importance of the environment, and these issues will not now be forgotten.

It is time, therefore, to open a new chapter in our work, a chapter in which we discover new ways of working with our UN and other partners and in which we put our new knowledge to work in the cause of sustainable development.

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[1] The UNEP programmes in the area of monitoring and assessment and the UN system-wide monitoring and assessment activities have both been referred to as Earthwatch. This has caused confusion. In this document, the term Earthwatch will be confined to the UN system-wide activity (see Section 1.6).

[2] Goffin, M. and Heath, T. (1993) Management by Results in UNEP: Results Model Working Group Report. Typescript 17pp + Appendices.

[3] There is a difference between early warning related to sudden man-made and natural disasters, such as cyclones, earthquakes, floods, chemical accidents, etc., and early warning related to environmental and/or developmental issues that gradually develop over years or even decades, such as drought, climate change, ozone depletion, soil contamination, resource depletion. These two types of early warning require a different approach and programme structure. UNEP's information, assessment and reporting programme as described in this paper focuses on the more long-term early-warning realm. Other programme components such as IE/PAC's APELL and the UN Centre for Urgent Environmental Assistance (UNCUEA) deal with the time frame before and after short-term disasters.

Assessment methodologies on environment/development interactions, and reports in selected areas

February 1994

DPCSD Electronic Exchange of Information

A. Executive Summary

The attached three tables outline the status of DPCSD exchange of electronic information and requirements for expanded access by the staff and its audience.

Table I covers access to information bases internal to the UN secretariat for staff and external users.

Table II covers access to information bases external to the UN Secretariat for DPCSD staff.

Table III covers database development need to improve access to DPCSD and the Secretariat information base for outside users.

All tables show the present situation, and recommended action to expand the exchange of information.

One important finding is that a major improvement in outside access to the UN information base would be possible by developing an interface to provide access via UNDP (or UN/DPI) Internet Gopher server to the Optical Disk System (ODS) being developed by the Office of Conference Services (See Table I, item B). ODS stores and permits the retrieval of full text parliamentary documentation of the UN since 1993, with coverage being extended to previous years as well. The ODS currently has only very limited capacity to provide outside access.

Concurrently DPCSD information staff will monitor closely and associate itself to the plans under way to develop a UN secretariat Gopher server in DPI.

Internal DPCSD exchange of information would be facilitated by the posting of information materials (accounts of senior staff meetings, list of forthcoming official and other meetings, newsletters) on an easily accessible electronic bulletin board (See Table III A and B).

Also important would be providing electronic access to the national reports submitted by governments in implementation of Agenda 21 (See Table III, item D).

The projects on the attached table require several man-years of system development, database management and user training support. It is proposed to have in-house staff of the Information Services Unit tackle priority projects; other projects will be undertaken as additional (e.g., consulting) resources become available.

B. Access to UN Secretariat networks and databases (Table I)

Access to major Secretariat databases loaded onto the UN mainframe (e.g., UNBIS, UNPRESS) is possible to all staff on the Secretary Local Area Network (LAN). Currently about 20 of the 120 or so DPCSD professionals are LAN connected. Forty more will be in April (Division for the Advancement of Women, Economic and Social Council Secretariat). For the remaining, LAN connection should be completed by September 1994.

The Information Services Unit will arrange for access to Secretariat databases for DPCSD staff as they become connected to the LAN and will notify the staff. Individual staff members should then make arrangements with the managers of the various databases (e.g., the Dag Hammarskjold Library for UNBIS) for training in the use of the databases.

In the interim, access to Secretariat databases, including the Optical Disk System, is available from the Documentation Unit , DC2-13th Floor.

Certain Secretariat databases and files, such as the resolutions of intergovernmental organs, are also loaded and accessible to external users via servers (e.g., UNDP) and networks (e.g., Togethernet) outside the UN Secretariat.

Access to electronic mail

Staff connected to the LAN can utilize the electronic mail service of the Secretariat (CC:Mail). The Information Services Unit will register with the ESD Electronic Mail Service Administrator all DPCSD staff connected to the LAN and notify the staff. Individual staff members should then make arrangements with the Training Service for instruction in the use of the facility.

C. Access to external networks and databases (Table II)

1. Access to commercial online databases and CD-ROMs

The Information Service Unit has secured access via subscription or other arrangements to a vast array of free or fee information resources (see Table II). At the suggestion of the information consultants to the Division for the Advancement of Women, funds will be sought to subscribe to the European-based ESA-IRS database vendor, which provides access to many databases in the social sciences; also, free access to the UN systems databases loaded onto the system of the International Development Research Centre (IDRC), Ottawa, Canada, will be sought; other major expansions do not appear to be required urgently in this area.

Access and expertise in the use of the databases will be provided in the Documentation Unit of DPCSD as soon as the process of recruiting a trained information retrieval specialist is completed. Basic services are currently provided out of the Documentation Unit in the DC2 building, 13th Floor.

Staff of the DPCSD is encouraged to contact the Information Services for assistance.

2. Access to Internet

Internet is a network of networks, which supports *inter alia* long-distance electronic mail services (including bulletin boards and conferences), transfer of electronic files, and interactive searching of remote databases. UN staff can have access to the electronic mail services of Internet via the ESD gateway accessible via CC:Mail.

The Information Services Unit will register with the Internet administrator all DPCSD staff connected to the LAN and CC:Mail, and define plans for training DPCSD staff in the use of the Internet with ESD, the Training service and the Dag Hammarskjold Library. Staff will be informed of training programs as they become available.

The rapid growth in the electronic resources available on Gopher and other systems through Internet, in the number of users reachable through it, and in the tools to permit its navigation will require that the Information Services Unit monitor closely development and suggest that the facility be dynamically used to implement the information projects of DPCSD.

3. Access to UNDP Gopher

A gateway to navigate the Internet, Gopher, is currently operated by the UNDP Division of Administration and Information. The UNDP Gopher server, with over 1,000 user access a day and a growing number of UN information sources, may become the tool of choice to disseminate DPCSD information directly to users to other networks, e.g., the Association for Progressive Computing and Togethernet.

However, a constraint for DPCSD in accessing this resource is that it requires dial-up via modem and telephone analog lines. There is only a limited number of analog lines available in DPCSD for use in connection with modems to log onto external electronic serves: one each in the Office of the Under-Secretary General; the Division for the Advancement of Women (DAW) (under installation); the Special Assignments and Information Services Unit (SAICU); the Operational Activities Coordinating Unit (OACU); the Documentation Unit, DC2-13th Floor; and two/three in the Division for Sustainable Development.

Focal point users in each branch/unit of DPCSD have been registered with the UNDP Gopher server administrator, and will be contacted for training. In addition, the Electronic Services Division has been requested to associate one staff member per branch/unit in DPCSD to an ESD pilot project to provide pooled access to analog lines for the Secretariat. In the interim, DPCSD management may wish to convey to the Office of General Service/ESD the critical importance of such access for the work of the department, and request it to expedite developments in this area.

D. Information exchange and database development requirements (Table III)

A number of projects are of interest in this area. In particular, it is proposed to establish electronic mailboxes/bulletin boards for the following types of DPCSD information, with the aim to help intra-departmental communication:

International management information, e.g., Records of staff meetings; List of meetings to be organized, attended;

Meeting records, e.g., briefing notes on meetings of the Second, Third Committees;

Newsletter, or letters of news, e.g., on women, ageing, the Social Summit;

Lists of papers or workshops organized by the Department;

List of new publications in the areas of work of the department.

This would be available via electronic mail of UNDP Gopher (in the latter case, with access restricted to DPCSD staff). Initially only staff on LAN or focal point with modems would have access to the electronic information; other staff would have access to the paper version of the information. As the LANning of the UN campus is completed, all staff would have access to the electronic information at their desktop.

Additional projects under this heading include the development of textual/numerical databases for the original information collected by the Department, as outlined in Table III. This includes, for example, national reports for Agenda 21, and reports of resident coordinators, It is planned to consult with the information focal points in each division/branch on specific requirements and strategies for development.

Dissemination policy

With the objective to improves access to internal and external databases, we recommend that the use of service providers and hosts of DPCSD information be inclusive, i.e.:

a) use what is available (e.g., UNDP Gopher);

b) co-operate in the development of new facilities (e.g., work with ESD and DPI to establish a UN Secretariat Gopher System);

c) provide electronic documents to networks (e.g., Togethernet, Econet, Bitnet) on a non exclusive basis, and explicitly require where appropriate that the information be further shared.

Table I. Access to UN Secretariat Databases by DPCSD and Outsiders

Information resource	Electronic storage/access systems	Host	Functionalities	Access			Access point in DPCSD	Action to expand access	Resource required
				Missns.	Secreta.	Other			
A. IG Organs resolutions (GA, SC, ESC)	In-house: 1. UNBIS 2. UNDP Gopher 3. Togethernet	UN Mainframe UNDP Togethernet	Boolean search in UNBIS; Search; browse; download	60 50	60 50	100s	1. All PCs on network can access UNBIS 2. & 3. Doc. Unit; One workstation per branch	1. Develop, distribute CD-ROM version of resolutions in cooperation with DPI 2. Support ESD, DPI to develop UN gopher accessible to each workstation on LAN	
B. UN parliamentary documents since 1/1/1993 (Some earlier)	Optical disk system (ODS)	ODS, in Office of Conf. Services	Windows-based search, download, print, etc.	10	5		1. Doc. Unit	1. Develop software to enable UNDP gopher to point and pull out records from ODS	$5,000 consultant sys. analysis
C. Journal of the UN	UNDP Gopher	UNDP	Scan; download			1000	1. Doc. Unit 1. One workstation per branch	As in A.2 above	Memo by USG
UNBIS (Bibliographic citations of UN, IGO, NGO, Govt and commercial docs and pub.)	In-house: 1. UNBIS Outside: 2. RLIN	1. UN Mainframe 2. Research Libraries Info Network	Boolean search, browse, download, recurrent searches	50	50	100s via RLIN	1. Doc. Unit 2. Each PC on LAN	1. Support DHL development of user friendly interface; and availability on LAN of CD-ROM version of db. 2. Acquire CD-ROM of UNBIS, if free	Memo by USG
UNPRESS (Text of UN press releases backgrounds briefs)	In-house: 1. UN Press Outside: 2. UNDP gopher 3. Togethernet	1. Mainframe 2. UNDP 3. Togethernet					- Doc. Unit (Mainframe, gopher, Togethernet) - Each PC on LAN (Mainframe) - One PC per branch (gopher, Togethernet)		
UNSTAT (Statistical files of DESIPA)	UNSTAT	Mainframe	Browse, download	50	50		- Doc. Unit - All PCs on LAN		

Table II. Access by DPCSD to external information services and CD-ROMs

INFORMATION SERVICE, RESOURCE	DESCRIPTION	ACCESS POINTS	ACTION TO EXPAND ACCESS	SYSTEMS DEVELOPMENT NEEDS	RESOURCES REQUIRED
Lexis/Nexis	Full text of newspapers and news releases worldwide	DPCSD Doc. Unit; DH Library	Arrange for end user training		$15,000/year subscription
Dialog	Citations to scholarly articles, books; also full text on demand	DPCSD Doc. Unit; DH Library	Arrange for info. staff training		$10,000/year subscription
Business periodicals on disk	Text and abstracts of 600,000 arts. on business and economics	DPCSD Doc. Unit	Connect to LAN via Jukebox server	In-house resources; 3 mos. system development	$15,000/year subscription; $10,000 hardware and software NOTE: CD-ROM LAN server could host additional CD-ROMs as required
Agenda 21	20,000 pages of UNCED docs. Windows-based search, retrieve	DPCSD Doc. Unit; Nat. Info. Analysis Unit			
UN System biblio. database	200,000 citations of docs. and pubs of UN system	DPCSD Doc. Unit			
Statistical yearbook	Demographic, economic, financial and other topics	DPCSD Doc. Unit			
UNDP Gopher	Search interface to UN and external info. resources on Internet. Can currently access Library of Congress databases; directories of staff of UN system; Resolutions, etc.	DPCSD Doc. Unit; + 1 password per branch	1. Train staff in use of system. 2. Find on Internet addl. free resources of interest to staff.	1. Prepare training tools. 2. Prepare info. profiles for staff. 3. Develop menus to access Internet res.	1. Three mos. info. specialist 2. Three mos. info specialist 3. One month system analyst
Internet	Vast network of networks	E-mail: Workstations on LAN	Train staff in use of system	Prepare training tools	Included in above

Table III. System Development Requirements to Expand Access to DPCSD Info. Resources

Information Material	Collection Procedures	Processing	Dissemination	System Devt. and Resource Reqmts.
Departmental misc. info. (List of mtgs., Sr. staff mtg. reports, etc.)	Author Division posts electronic text on bulletin board or broadcasts via CC:Mail	ISU established bulletin board, monitors process, follows-up with author Division	All workstations on LAN have access to the bulletin board and CC:Mail	In-house resources: 1 month system analyst; 2 mos. training of staff by info. specialist (written procedures)
Departmental and Divisional newsletters (e.g., women, ageing)	Author Division posts electronic text on bulletin board or broadcasts via CC:Mail	ISU established bulletin board, monitors process, follows-up with author Division	All workstations on LAN have access to the bulletin board and CC:Mail; dissemin. via UNDP gopher	In-house resources: 1 month system analyst; 2 mos. training of staff by info. specialist (written procedures)
Papers of expert group meetings	Substantive servicing Divn. to forward: a) paper copy to ISU; b) electronic copy to UNDP gopher	ISU maintains collection in Doc. Unit; design, implement automatic routing of electronic files to UNDP gopher and other networks; establ. structure for posting of papers	All workstations on LAN have access to UNDP gopher; external users on Internet have access to UNDP gopher	In-house resources: 3 mos. system analyst; 3 mos. info. specialist for staff training, follow-up
National reports in implementation of Agenda 21	Nat. Info. Analysis Unit to collect reports, assign codes	ISU, NIAU, design database, specify software, test database, draft documentation; ISU, Togethernet to store in electronic form full text and analysis of data	NIAU, DPCSD establish criteria for access	In-house resources: 1 year system analyst; 1 year database manager
Resident Coordinators' reports	OACU collects reports and enters them to database	Oper. Act. Coord. Unit, ISU tailor doc. mgmt. software to retrieve contents of reports	Establish criteria for access; make accessible via Higgins Network to Res. Coords.	6 mos. system analyst; 6 mos. database manager to design system, train users and prepare documentation

NGONET

Information on Environment/Development for Non-Governmental Organizations
Información sobre Ambiente/Desarrollo para Organizaciones No-Gubernamentales

> "In sustainable development, everyone is a user and provider of information considered in the broad sense. That includes data, information, appropriately packaged experience and knowledge. The need for information arises at all levels, from that of senior decision makers at the national and international levels to the grass-roots and individual levels." Agenda 21, Chapter 40

BACKGROUND

The problem

The growing North-South information and communication gap has been repeatedly identified as one of the major obstacles to sustainable and equitable development. At the same time, the "information revolution" provides a wide set of new tools and opportunities to bridge that gap.

Agenda 21 explicitly recognizes that situation: "The gap in the availability, quality, coherence, standardization and accessibility of data between the developed and the developing world has been increasing, seriously impairing the capacities of countries to make informed decisions concerning environment and development."

Agenda 21 proposes in its "Information for decision-making" chapter:

> 40.20. National capacities should be strengthened, as should capacities within Governments, non-governmental organizations and the private sector, in information handling and communication, particularly within developing countries.
>
> [...] Special emphasis should be placed on the transformation of existing information into forms more useful for decision-making and on targeting

> information at different user groups. [...] Electronic and non-electronic formats should be used.
>
> Governments should consider supporting the efforts of governmental as well as non-governmental organizations to develop mechanisms for efficient and harmonized exchange of information at the local, national, provincial and international levels, including revision and establishment of data, access and dissemination formats, and communication interfaces.
>
> The organs and organizations of the United Nations system, as well as other governmental and non-governmental organizations, should document and share information about the sources of available information [...] Networking and coordinating mechanisms should be encouraged between the wide variety of other actors, including arrangements with non-governmental organizations for information sharing and donor activities for sharing information on sustainable development projects.
>
> Countries, international organizations, including organs and organizations of the United Nations system, and non-governmental organizations should exploit various initiatives for electronic links to support information sharing, to provide access to databases and other information sources, to facilitate communication for meeting broader objectives, such as the implementation of Agenda 21, to facilitate intergovernmental negotiations, to monitor conventions and efforts for sustainable development to transmit environmental alerts, and to transfer technical data. These organizations should also facilitate the linkage of different electronic networks and the use of appropriate standards and communication protocols for the transparent interchange of electronic communications. Where necessary, new technology should be developed and its use encouraged to permit participation of those not served at present by existing infrastructure and methods. Mechanisms should also be established to carry out the necessary transfer of information to and from non-electronic systems to ensure the involvement of those not able to participate in this way.

NGONET was created in 1991 precisely to address those problems and its First Phase proposal included many of the mechanisms later identified by Agenda 21 as suitable to solve them.

During the process of the Earth Summit NGONET established an innovative global NGO environmental and development information-sharing networking process, with specific concern for the information needs of the South, indigenous peoples, women and grassroots organizations.

NGONET has responded to these needs in different languages and appropriate formats, combining electronic communication technologies with 'conventional' tools like mail, fax, phone, printed newsletters, features and books and radio programs.

The project started in October 1991, with grants from Novib and IDRC. Its first phase ended a year later. IDRC approved an extension of the project and Novib contributed bridging funds to allow for continuity of the operations while a longer term action plan is implemented. NGONET has been hosted by ITeM (Instituto del Tercer Mundo), a non-profit organization based in Montevideo, Uruguay which publishes "Third World Guide" (a reference work in book and CD-ROM format), acts as Latin American secretariat of Third World Network, and administers the Chasque APC node.

Major efforts in the initial phase of NGONET have gone into establishing the technical and informational/documentational base, mainly in Montevideo, and into developing a pilot for decentralized information gathering and dissemination at the sub-regional level, mainly in Nairobi.

During the initial phase, NGONET activities included:

A. ESTABLISHMENT OF THE MONTEVIDEO CLEARING HOUSE

- An international team was gathered to staff the office;
- An international Advisory Group was formed and an electronic conference (ngonet.council) set up for its 'virtual meetings'.
- A UNIX computer host was installed, allowing for massive information processing, in-house office automation and international connectivity (the APC 'Chasque' node). The ITeM office is also integrated into this network which allows NGONET access to information stored by Third World Guide, the Latin American secretariat of Third World Network and other projects hosted by ITeM.

B. NGO INFORMATION SYNTHESIS AND DISSEMINATION

- Editorial policies were developed with feedback from the Advisory Group.
- Information was summarized, edited and disseminated using many channels appropriate to the needs of the users, including e-mail, fax, electronic conference postings, courier, and mail.

- Many news services established a two-way information flow, using NGONET copy for their publications and feeding information into NGONET channels (IPS, SUNS, TWN and others).

- EcoNews Africa, a fortnightly NGO circular on environment and development was started in Nairobi, downloading NGONET input from electronic mail and adapting it to local needs, and reporting on local activities that address global issues, thus establishing a model for NGONET 'nodes' (see appendix 2).

C. INFORMATION STORAGE AND RETRIEVAL

- NGOBIB and NGODAT databases were created to handle bibliographical and contacts information

- Full-Text documents are stored in electronic format (NGOFULL) to allow for fast retrieval and dissemination of selected documents. NGONET's document collection is also handled automatically by a document server that enables any e-mail user in the world (even those not able to access the Internet) to request indexes and specific documents.

- That information was offered on-line during PrepComm 4 (New York) and UNCED through the FreeNet system - developed by NGONET and IGC. NGONET information is also made freely available on-line permanently through the APC network, Geonet and Antenna (Netherlands)

- NGOBIB and NGOFULL are the basis for the on-going publication of the "unofficial UNCED CD-ROM", which will include an exhaustive collection of NGO input into the UNCED process.

- Through a good collaborative relationship with the UNCED Secretariat, NGONET was kept supplied with latest versions of the UNCED Agenda 21 and bibliographical databases, and offered access to them both on-line and through non-electronic means. Chapter 40 of Agenda 21 ("Information for Decision Making") includes a section on electronic networking and the need to bridge the gap between them and conventional communication media, which coincides with many of the concepts that gave origin to NGONET.

D. OUTREACH

- NGONET staff participated in many key NGO international events, establishing links, gathering information and providing communication services

- NGONET helped to fund electronic communications outreach work in Africa, which resulted in direct support to the establishment of several small nodes in different countries.

- In Asia, NGONET identified existing small nodes or institutions willing to host them, helped them to link with the APC (mainly through GreenNet), to raise money for buying modems and experimental long distance calls, and organized training workshops in Delhi and Bombay. NGONET attended the October 1992 SEAFDA-Interdoc Conference in Manila, which developed a strategy for the expansion of electronic communications in Asia.

- NGONET assisted the International NGO Forum with information and communication support. NGONET contributed to translate and disseminate the final versions of the treaties, particularly by creating an internationally distributed electronic conference (ingof.treaties) with the final texts in four languages and the lists of institutional and individual signatories. NGONET also set up a permanent database of the signatories of the NGO Treaties drafted in Rio, an essential tool for follow up activities and is now providing the Earth Council distribution lists in Latin America for their printed Spanish and Portuguese versions of the treaties.

- There has been considerable collaboration with the World Rainforest Movement on the dissemination of information produced by indigenous forest peoples of the South. NGONET also contributed to disseminate the final declaration of the ITeM/RM organized workshop in New York on the relation between deforestation and insecurity of access to the land by poor peasants in the Third World.

- NGONET contributed to link NGOs from different continents working on the issue of tree plantations and was present at their meeting in Rio, during the Earth Summit, when an International Working Group on Paper and Homogenous Plantations was established. NGONET is providing that group with communications assistance (helping to create electronic conferences and feeding them with information in Spanish and English), as well as information dissemination.

- NGONET attended the Miami World Women's Congress for a Healthy Planet and disseminated information generated by the conference; assisted in the organization and promotion of the Rio women's day of "Solidarity and Diversity"; worked with APC in Rio in training sessions for women; worked closely with the Women and Environments Education and Development (WEED) Foundation, on the trilingual translation(English, Spanish and French), publication and distribution of the book "POWER, POPULATION, AND THE ENVIRONMENT: WOMEN SPEAK" and is currently participating, together with the women's coordinator from IGC, in the establishment of a "women's desk" at all major APC electronic node sites, to focus on support and outreach to women in Africa, Asia, Latin America and Europe.

- NGONET has begun providing concrete help and encouragement to unions and labour groups in Uruguay and other Latin-American countries in using electronic communications for their networking needs and the first internationally distributed electronic conference on union issues (sindicatos) was set up.

- The Latin American follow-up NGO conference "Rio: a year after" (Santiago, June 1993) explicitly recognized the usefulness of NGONET services in its final declaration.

E. TECHNICAL SUPPORT AND SYSTEMS ESTABLISHMENT

- The final installation of the Chasque APC node at ITeM (August 1992) puts NGONET in a privileged position in terms of global connectivity and user response capabilities.

- NGONET assisted in the implementation of an NGO electronic node in Argentina (Wamani), soon to become a full member of the APC network

- NGONET provided direct training to NGO operators locally in Uruguay, Argentina, Chile, Colombia, Malaysia, India, Thailand, Korea, Spain and several African countries; on-line to a wide audience as well as during NGO international meetings and the New York and Rio conferences

- NGONET developed several pieces of software of particular interest to small NGO nodes, Southern users and non-English speaking users (for example for the handling of accents and other diacriticals)

- With the cooperation of the Canadian Mission at the UN, NGLS, and the UNCED Secretariat, NGONET installed a distribution system for official documents during PrepCom 4. This was a much appreciated service since the UN was unable to provide timely printed copies to delegates and NGOs

- FreeNet Access System : Working with IGC, NGONET technical staff developed a public information access system called FreeNet (see appendix 5). By means of a simple menu-driven program, NGOs attending at the 4th PrepCom of UNCED (March '92 in New York) and at the Rio NGO events were able to access information on other NGOs, Agenda 21, etc., and print out documents. This successful service was installed on NGONET computers and data/telephone lines in the main foyer of the UN in New York and the NGO Communication Unit in New York. In cooperation with IBASE and APC, the service was also offered at the NCC (NGO Communications Centre) in Rio. As a result of this massive exposure to telematic tools, the use of electronic communication systems by NGOs started to increase in the following months. NGONET was asked by NGLS/New York to set up a communication and information room for NGOs during the first meeting of the Population and Development Conference PrepComm (New York, May 10-21, 1993), installing FreeNet and providing similar services. This exercise was repeated during the June '93 meeting of the Sustainable Development Commission and is likely to become a permanent feature of UN negotiating meetings where NGO input is requested.

F. COLLABORATIVE INITIATIVES

- Africa: NGONET worked with NIRV (Canada) to organize the "Global Communications Workshop" funded by IDRC and Partnership Africa-Canada (PAC). The workshop was held in Toronto, February 1992 and resulted in concrete initiatives to support electronic networking in Africa. The links between NGONET and African small nodes were strengthened through two further smaller meetings in Nairobi (November 1992 and February 1993).

- NGONET was invited by UNDP to their September 1992 and February 1993 workshops on Sustainable Development Networks. NGONET will provide information for the SDN's "starters kit". NGONET is in touch with interested NGOs from different parts of the world to make sure NGO

input is brought to the SDN process, now studying feasibility of implementing those networks in some 50 countries.

- NGONET worked parallel to the UNCED Secretariat on the problems of achieving on-line access to databases during the Rio events. Bibliographic and Agenda 21 database exchanges took place.

- NGONET helped coordinate the drafting of the NGO Communications "treaty". The many working sessions that drafted this agreement among NGOs produced important feedback on their communication and information needs.

- NGONET was invited by El Colegio Verde (Green College) of Colombia and UN Volunteers to their March 1993 workshop on environmental communications and information exchange. As a result of this debates UNV started to consult with NGONET on the idea of establishing a first pilot "knowbot" (Information Robot) with information on appropriate agricultural technologies.

- Development of Database Server: NGONET is working in coordination with IBASE on the development of a database server able to put databases from different NGO sources on-line at the APC nodes.

- An off-line reader was developed in collaboration with NIRV (Canada) and Pegasus (Australia), which substantially reduces communication costs for users, particularly in the South that can not access the APC networks through local calls.

- Collaboration with Third World Network has enabled NGONET to have a significant presence at the land reform/deforestation workshop (held in New York, organized by ITeM and the World Rainforest Movement) and help produce/distribute TWN's position papers on UNCED. The TWN secretariat has asked NGONET to provide technical support to enhance its communication/information activities and committed itself to act as NGONET's information broker for the Asian region.

ANNEX III

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ANNEX IV

CHAPTER 40: INFORMATION FOR DECISION MAKING

INTRODUCTION

40.1. In sustainable development, everyone is a user and provider of information considered in the broad sense. That includes data, information, appropriately packaged experience and knowledge. The need for information arises at all levels, from that of senior decision makers at the national and international levels to the grass-roots and individual levels. The following two programme areas need to be implemented to ensure that decisions are based increasingly on sound information:

(a) Bridging the data gap;

(b) Improving information availability.

PROGRAMME AREAS

A. Bridging the data gap

Basis for action

40.2. While considerable data already exist, as the various sectoral chapters of Agenda 21 indicate, more and different types of data need to be collected, at the local, provincial, national and international levels, indicating the status and trends of the planet's ecosystem, natural resource, pollution and socio-economic variables. The gap in the availability, quality, coherence, standardization and accessibility of data between the developed and the developing world has been increasing, seriously impairing the capacities of countries to make informed decisions concerning environment and development.

40.3. There is a general lack of capacity, particularly in developing countries, and in many areas at the international level, for the collection and assessment of data, for their transformation into useful information and for their

dissemination. There is also need for improved coordination among environmental, demographic, social and developmental data and information activities.

40.4. Commonly used indicators such as the gross national product (GNP) and measurements of individual resource or pollution flows do not provide adequate indications of sustainability. Methods for assessing interactions between different sectoral environmental, demographic, social and developmental parameters are not sufficiently developed or applied. Indicators of sustainable development need to be developed to provide solid bases for decision-making at all levels and to contribute to a self-regulating sustainability of integrated environment and development systems.

Objectives

40.5. The following objectives are important:

(a) To achieve more cost-effective and relevant data collection and assessment by better identification of users, in both the public and private sectors, and of their information needs at the local, provincial, national and international levels;

(b) To strengthen local, provincial, national and international capacity to collect and use multisectoral information in decision-making processes and to enhance capacities to collect and analyze data and information for decision-making, particularly in developing countries;

(c) To develop or strengthen local, provincial, national and international means of ensuring that planning for sustainable development in all sectors is based on timely, reliable and usable information;

(d) To make relevant information accessible in the form and at the time required to facilitate its use.

Activities

(a) Development of indicators of sustainable development

40.6. Countries at the national level and international governmental and non-governmental organizations at the international level should develop the concept of indicators of sustainable development in order to identify such

indicators. In order to promote the increasing use of some of those indicators in satellite accounts, and eventually in national accounts, the development of indicators needs to be pursued by the Statistical Office of the United Nations Secretariat, as it draws upon evolving experience in this regard.

(b) Promotion of global use of indicators of sustainable development

40.7. Relevant organs and organizations of the United Nations system, in cooperation with other international governmental, intergovernmental and non-governmental organizations, should use a suitable set of sustainable development indicators and indicators related to areas outside of national jurisdiction, such as the high seas, the upper atmosphere and outer space. The organs and organizations of the United Nations system, in coordination with other relevant international organizations, could provide recommendations for harmonized development of indicators at the national, regional and global levels, and for incorporation of a suitable set of these indicators in common, regularly updated, and widely accessible reports and databases, for use at the international level, subject to national sovereignty considerations.

(c) Improvement of data collection and use

40.8. Countries and, upon request, international organizations should carry out inventories of environmental, resource and developmental data, based on national/global priorities for the management of sustainable development. They should determine the gaps and organize activities to fill those gaps. Within the organs and organizations of the United Nations system and relevant international organizations, data-collection activities, including those of Earthwatch and World Weather Watch, need to be strengthened, especially in the areas of urban air, freshwater, land resources (including forests and rangelands), desertification, other habitats, soil degradation, biodiversity, the high seas and the upper atmosphere. Countries and international organizations should make use of new techniques of data collection, including satellite-based remote sensing. In addition to the strengthening of existing development-related data collection, special attention needs to be paid to such areas as demographic factors, urbanization, poverty, health and rights of access to resources, as well as special groups, including women, indigenous peoples, youth, children and the disabled, and their relationships with environment issues.

(d) Improvement of methods of data assessment and analysis

40.9. Relevant international organizations should develop practical recommendations for coordinated, harmonized collection and assessment of data at the national and international levels. National and international data and information centres should set up continuous and accurate data-collection systems and make use of geographic information systems, expert systems, models and a variety of other techniques for the assessment and analysis of data. These steps will be particularly relevant, as large quantities of data from satellite sources will need to be processed in the future. Developed countries and international organizations, as well as the private sector, should cooperate, in particular with developing countries, upon request, to facilitate their acquiring these technologies and this know-how.

(e) Establishment of a comprehensive information framework

40.10. Governments should consider undertaking the necessary institutional changes at the national level to achieve the integration of environmental and developmental information. At the international level, environmental assessment activities need to be strengthened and coordinated with efforts to assess development trends.

(f) Strengthening of the capacity for traditional information

40.11. Countries, with the cooperation of international organizations, should establish supporting mechanisms to provide local communities and resource users with the information and know-how they need to manage their environment and resources sustainably, applying traditional and indigenous knowledge and approaches when appropriate. This is particularly relevant for rural and urban populations and indigenous, women's and youth groups.

Means of implementation

(a) Finance and cost evaluation

40.12. The secretariat of the Conference has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about $1.9 billion from the international community on grant or concessional terms. These are indicative and order of magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms,

including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

(b) Institutional means

40.13. Institutional capacity to integrate environment and development and to develop relevant indicators is lacking at both the national and international levels. Existing institutions and programmes such as the Global Environmental Monitoring System (GEMS) and the Global Resource Information Database (GRID) within UNEP and different entities within the systemwide Earthwatch will need to be considerably strengthened. Earthwatch has been an essential element for environment-related data. While programmes related to development data exist in a number of agencies, there is insufficient coordination between them. The activities related to development data of agencies and institutions of the United Nations system should be more effectively coordinated, perhaps through an equivalent and complementary "Development Watch", which with the existing Earthwatch should be coordinated through an appropriate office within the United Nations to ensure the full integration of environment and development concerns.

(c) Scientific and technological means

40.14. Regarding transfer of technology, with the rapid evolution of data-collection and information technologies it is necessary to develop guidelines and mechanisms for the rapid and continuous transfer of those technologies, particularly to developing countries in conformity with chapter 34 and for the training of personnel in their utilization.

(d) Human resources development

40.15. International cooperation for training in all areas and at all levels will be required, particularly in developing countries. That training will have to include technical training of those involved in data collection, assessment and transformation, as well as assistance to decision makers concerning how to use such information.

(e) Capacity-building

40.16. All countries, particularly developing countries, with the support of international cooperation, should strengthen their capacity to collect, store, organize, assess and use data in decision-making more effectively.

B. Improving availability of information

Basis for action

40.17. There already exists a wealth of data and information that could be used for the management of sustainable development. Finding the appropriate information at the required time and at the relevant scale of aggregation is a difficult task.

40.18. Information within many countries is not adequately managed, because of shortages of financial resources and trained manpower, lack of awareness of the value and availability of such information and other immediate or pressing problems, especially in developing countries. Even where information is available, it may not be easily accessible, either because of the lack of technology for effective access or because of associated costs, especially for information held outside the country and available commercially.

Objectives

40.19. Existing national and international mechanisms of information processing and exchange, and of related technical assistance, should be strengthened to ensure effective and equitable availability of information generated at the local, provincial, national and international levels, subject to national sovereignty and relevant intellectual property rights.

40.20. National capacities should be strengthened, as should capacities within Governments, non-governmental organizations and the private sector, in information handling and communication, particularly within developing countries.

40.21. Full participation of, in particular, developing countries should be ensured in any international scheme under the organs and organizations of the United Nations system for the collection, analysis and use of data and information.

Activities

(a) Production of information usable for decision-making

40.22. Countries and international organizations should review and strengthen information systems and services in sectors related to sustainable development, at the local, provincial, national and international levels. Special emphasis should be placed on the transformation of existing information into forms more useful for decision-making and on targeting information at different user groups. Mechanisms should be strengthened or established for transforming scientific and socio-economic assessments into information suitable for both planning and public information. Electronic and non-electronic formats should be used.

(b) Establishment of standards and methods for handling information

40.23. Governments should consider supporting the efforts of governmental as well as non-governmental organizations to develop mechanisms for efficient and harmonized exchange of information at the local, national, provincial and international levels, including revision and establishment of data, access and dissemination formats, and communication interfaces.

(c) Development of documentation about information

40.24. The organs and organizations of the United Nations system, as well as other governmental and non-governmental organizations, should document and share information about the sources of available information in their respective organizations. Existing programmes, such as those of the Advisory Committee for the Coordination of Information Systems (ACCIS) and the International Environmental Information System (INFOTERRA), should be reviewed and strengthened as required. Networking and coordinating mechanisms should be encouraged between the wide variety of other actors, including arrangements with non-governmental organizations for information sharing and donor activities for sharing information on sustainable development projects. The private sector should be encouraged to strengthen the mechanisms of sharing its experience and information on sustainable development.

(d) Establishment and strengthening of electronic networking capabilities

40.25. Countries, international organizations, including organs and organizations of the United Nations system, and non-governmental organizations should exploit various initiatives for electronic links to support information sharing, to provide access to databases and other information sources, to facilitate communication for meeting broader objectives, such as the implementation of Agenda 21, to facilitate intergovernmental negotiations, to monitor conventions and efforts for sustainable development to transmit environmental alerts, and to transfer technical data. These organizations should also facilitate the linkage of different electronic networks and the use of appropriate standards and communication protocols for the transparent interchange of electronic communications. Where necessary, new technology should be developed and its use encouraged to permit participation of those not served at present by existing infrastructure and methods. Mechanisms should also be established to carry out the necessary transfer of information to and from non-electronic systems to ensure the involvement of those not able to participate in this way.

(e) Making use of commercial information sources

40.26. Countries and international organizations should consider undertaking surveys of information available in the private sector on sustainable development and of present dissemination arrangements to determine gaps and how those gaps could be filled by commercial or quasi-commercial activity, particularly activities in and/or involving developing countries where feasible. Whenever economic or other constraints on supplying and accessing information arise, particularly in developing countries,
innovative schemes for subsidizing such information-related access or removing the non-economic constraints should be considered.

Means of implementation

(a) Finance and cost evaluation

40.27. The secretariat of the Conference has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about $165 million from the international community on grant or concessional terms. These are indicative and order of magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms,

including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

(b) Institutional means

40.28. The institutional implications of this programme concern mostly the strengthening of already existing institutions, as well as the strengthening of cooperation with non-governmental organizations, and need to be consistent with the overall decisions on institutions made by the United Nations Conference on Environment and Development.

(c) Capacity-building

40.29. Developed countries and relevant international organizations should cooperate, in particular with developing countries, to expand their capacity to receive, store and retrieve, contribute, disseminate, use and provide appropriate public access to relevant environmental and developmental information, by providing technology and training to establish local information services and by supporting partnership and cooperative arrangements between countries and on the regional or sub-regional level.

(d) Scientific and technological means

40.30. Developed countries and relevant international organizations should support research and development in hardware, software and other aspects of information technology, in particular in developing countries, appropriate to their operations, national needs and environmental contexts.